TAB R

KELLEY DRYE & WARREN LLP
A LIMITED LIABILITY PARTNERSHIP
3050 K STREET, N.W.
SUITE 400
WASHINGTON, D.C. 20007
(202) 342-8400

NEW YORK, NY
TYSONS CORNER, VA
CHICAGO, IL
STAMFORD, CT
PARSIPPANY, NJ
BRUSSELS, BELGIUM
AFFILIATE OFFICES
MUMBAI, INDIA

FACSIMILE
(202) 342-8451
www.kelleydrye.com

DIRECT LINE: (202) 342-8531
EMAIL: gmorelli@kelleydrye.com

October 24, 2008

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th St., SW
Washington, D.C. 20554

Re: *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92

Dear Ms. Dortch:

On October 14, 2008, AT&T and Verizon submitted a joint letter in the above-captioned docket proposing what they characterized as "a simplified set of [default] rules" to govern "the obligations of interconnecting carriers in the context of comprehensive intercarrier compensation reform."[1] According to AT&T and Verizon, the purpose of the default rules contained in the letter is to "define the functions governed by a uniform terminating rate"[2] if the Commission chooses to subject all terminating traffic to Section 251(b)(5) of the Communications Act of 1934, as amended.[3] The undersigned carriers have previously voiced their concerns regarding the network interconnection provisions being promoted by these incumbent carriers.[4] The representations made by AT&T and Verizon in the *Oct. 14th Letter* fail to address those concerns or to provide a reasoned explanation as to why the Commission should

1 Letter from Hank Hultquist, AT&T, and Donna Epps, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission, CC Docket No. 01-92 (filed Oct. 14, 2008) ("*Oct. 14th Letter*").

2 *Oct. 14th Letter*, at 1.

3 47 U.S.C. § 251(b)(5).

4 *See, e.g.*, Letter from 360networks(USA), inc., *et al.*, to Marlene H. Dortch, Secretary, Federal Communications Commission, CC Docket No. 01-92, WC Docket No. 04-36 (filed Sept. 29, 2008) ("*Sept. 29th Letter*").

include interconnection issues in its order revising the current intercarrier compensation regime. For those reasons and for the additional reasons discussed below, the Commission should reject the proposed default interconnection rules contained in the *Oct. 14th Letter*.

Moreover, as explained below, should the Commission decide to classify all IP-to-PSTN traffic as an information service, the Commission should specify that local exchange carriers ("LECs") are permitted, at their discretion, to provide transmission for IP-enabled services as a common carrier telecommunications service.

I. THE DEFAULT INTERCONNECTION RULES PROPOSED BY AT&T AND VERIZON SHOULD BE REJECTED

As a threshold matter, AT&T and Verizon have failed to offer any reason why the current regulatory framework governing interconnection between incumbent local exchange carriers ("ILECs") and competitive local exchange carriers ("CLECs") would not suffice should the Commission adopt new intercarrier compensation rules and why new default interconnection requirements are necessary. Section 251(c)(2) of the Act[5] and the Commission's rules implementing that provision provide a comprehensive framework for the administration of interconnection rights and obligations between incumbent carriers and competitors. Under that framework, mandatory interconnection requirements are imposed on ILECs and a mechanism is provided to enforce those requirements. CLECs are given the ability to design their own networks, based on their particular business plans, and to negotiate interconnection arrangements with ILECs. More specifically, CLECs are free to choose the point of interconnection, the technology used to interconnect, and whether interconnection will be direct or indirect.[6] If the parties cannot agree on these issues, CLECs may request state commission arbitration to enforce their interconnection rights.[7] This regime has served the industry well, and the interconnection rates, terms and conditions that have resulted have allowed facilities-based competitors to gain a significant toehold in the market. Absent a compelling reason – which AT&T and Verizon have failed to offer – the current regime should not be disrupted by the Commission.[8]

---

5 47 U.S.C. § 251(c)(2).

6 *See Sept. 29th Letter*, at 2, quoting *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, 11 FCC Rcd 15499, ¶¶ 206, 209, 997 (1996) ("*Local Competition Order*") (subsequent history omitted).

7 *See* 47 U.S.C. § 252(b)(1).

8 Even if there were a legitimate reason to alter existing interconnection rules – which there is not – AT&T and Verizon have failed to specify precisely how the default rules they advocate would modify or replace the particular rules that apply today and what the anticipated effects would be for ILECs and their competitors.

Moreover, AT&T and Verizon have failed to identify how their proposed default rules would interact with the procedural and substantive requirements of Sections 251(c)(2) and 252(b)(1) of the Act. For example, important questions regarding whether (or how) the default rules would affect a competitor's right under Section 252 to arbitrate interconnection rates and terms have not been specified. Further, AT&T and Verizon have not indicated how their proposed rules would relate to existing negotiated or arbitrated interconnection agreements (*e.g.*, could these rules be imposed on a CLEC during the term of an interconnection agreement through the change-in-law amendment process?). It is likewise unclear how (if at all) adoption of these rules would affect the ability of state commissions to impose interconnection requirements that deviate from the default rules. In the absence of these critical details, the Commission should not even contemplate adoption of the AT&T/Verizon proposal.

It is especially important that the Commission ignore entreaties by AT&T and Verizon to modify the current network interconnection regime since the particular default rules they would have the Commission adopt could have significant anticompetitive consequences. Under the proposed rules, "[t]he calling party service provider may at its sole discretion choose whether to interconnect directly or indirectly with the called party."[9] Further, "[t]he called party service provider must either permit interconnection at its edge ... or provide transport at no charge to that edge from a location in the same LATA where it does permit such interconnection."[10] The practical result of these particular proposals would be to turn the interconnection rights and obligations contained in Section 251 on their head. These provisions would force CLECs to accept interconnection obligations the Act imposes only on ILECs or to provide transport to ILECs free of charge.

Section 251(c)(2)(B) imposes on ILECs the obligation to interconnect with any requesting telecommunications carrier "at any technically feasible point within the carrier's network."[11] Thus, CLECs have the right to interconnect with ILEC networks on a direct or indirect basis.[12] Direct interconnection, however, is not required under Section 251(a) of non-ILEC telecommunications carriers.[13] Yet by establishing that the calling party service provider (whether CLEC or ILEC) may unilaterally choose direct or indirect interconnection, the AT&T/Verizon proposed rules would directly conflict with this statutory construct and would subject CLECs to the obligations of Section 251(c)(2) – obligations Congress expressly reserved for incumbent carriers.

---

9 *Oct. 14th Letter*, at 2.

10 *Id.*

11 47 U.S.C. § 251(c)(2)(B).

12 *See Local Competition Order*, at 15991, ¶ 997.

13 47 U.S.C. § 251(a).

The proposed AT&T/Verizon rules further state that the called party is obligated to permit direct interconnection at its edge or provide transport free of charge to that edge from the location in a LATA where it permits interconnection.[14] By granting an ILEC the right to refuse a CLEC direct interconnection, this rule would directly conflict with the ILECs' statutory obligation under Section 251(c)(2)(B) of the Act to permit CLECs to interconnect "at any technically feasible point within the [ILECs'] network."[15] Conversely, under this provision, a CLEC that refuses to voluntarily embrace the ILECs' Section 251(c)(2) obligation to permit direct interconnection would be forced to provide transport to its interconnection point free of charge. These outcomes are in direct conflict with the intent of Congress as embodied in Section 251.

Finally, the AT&T/Verizon proposed rules could result in unfair or irrational compensation situations. The proposed rules define a called party service provider's network edge as "the location of its end office, MSC, point of presence, or trunking media gateway, which PSTN routing conventions ... associate with the called party telephone number *unless that location subtends a tandem switch owned or controlled by the called party service provider*, in which case that tandem is the network edge for that call."[16] Where one carrier owns or controls the tandem and another carrier owns or controls the called party's end office, the calling party service provider would pay the tandem carrier a transit rate before paying the intercarrier compensation rate to the called party service provider. It is not clear how these new rules would interact with existing arrangements in interconnection agreements or, in situations where an ILEC is the calling party service provider and another ILEC owns or controls the tandem, how this rule would affect existing arrangements (*e.g.*, EAS agreements) between those ILECs.

For all of the foregoing reasons, the default interconnection rules advocated by AT&T and Verizon in the *Oct. 14th Letter* should be rejected by the Commission.

II. LECs MUST BE PERMITTED TO PROVIDE TRANSMISSION FOR IP-ENABLED SERVICES AS A COMMON CARRIER TELECOMMUNICATIONS SERVICE

Recent press accounts have indicated that the Commission may be considering whether to declare all IP-to-PSTN traffic to be an information service that is classified as interstate for jurisdictional purposes. Such a finding should be avoided because it would be over-reaching, particularly with respect to fixed VoIP services, where both the originating and terminating points of a call are no less ascertainable than with respect to TDM-based services –

---

14 *Oct. 14th Letter*, at 2.

15 47 U.S.C. § 251(c)(2)(B).

16 *Oct. 14th Letter*, at 1-2 (emphasis supplied).

and, thus, preemption of state jurisdiction would contravene the requirements of Section 152(b) of the Act.[17] If the Commission elects to make such an erroneous classification, however, it is essential that the Commission make clear that its classification of IP-to-PSTN traffic as an information service for purposes of assessment of intercarrier compensation does not undermine the rights of facilities-based CLECs to obtain unbundled network elements ("UNEs") and interconnection pursuant to Sections 251(c)(2) & (3) when providing IP-based services to end users or other carriers. CLECs are dependent upon access to cost-based interconnection and UNEs to deliver bundled IP-based services to literally millions of end user and carrier customers today, and great care must be taken not to undermine that critical regime.

One way to accomplish this would be for the Commission to clarify that the regulatory framework adopted for interstate VoIP services is the same as has been previously adopted for broadband Internet access services offered by wireline facilities-based providers.[18] In the *Broadband Classification Order*, the Commission classified wireline broadband Internet access service as an "information service."[19] Critically, however, the Commission permitted facilities-based wireline carriers to offer broadband Internet access transmission arrangements for wireline broadband Internet access services on either a common carrier or a non-common carrier basis.[20] Thus, wireline carriers were given the option of electing to offer the transmission input to their Internet access services as a "telecommunications service," provided that they did so on a common carrier basis and complied with regulatory requirements applicable to the provision of telecommunications services.[21] This treatment was consistent with a long history of permitting carriers to decide whether to offer their services on a common carrier or non-common carrier basis.[22] It should be adopted with respect to VoIP and other IP-enabled services as well if the Commission otherwise decides to declare IP-to-PSTN traffic to be an information service. Such an approach serves the public interest by "providing all wireline broadband providers the flexibility to offer these services in the manner that makes the most

---

17 47 U.S.C. § 152(b).

18 *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, CC Docket Nos. 02-33, *et al.* (released Sept. 23, 2005) ("*Broadband Classification Order*").

19 *Broadband Classification Order*, at ¶ 4.

20 *Id.*, at ¶¶ 5, 89-95.

21 *Id.*, at ¶ 90.

22 *Id.*, at n. 280.

sense as a business matter and best enables them to respond to the needs of consumers in their respective service areas"[23] and ensures that essential interconnection is available where required to provide IP-enabled services.

Sincerely,

Brad E. Mutschelknaus
Genevieve Morelli
KELLEY DRYE & WARREN LLP
Washington Harbour
3050 K Street, N.W., Suite 400
Washington, D.C. 20007
202-342-8531 (phone)

Counsel to Broadview Networks, Inc., Cavalier Telephone, NuVox, and XO Communications, LLC

cc: Nicholas G. Alexander
Amy Bender
Scott Bergmann
Scott M. Deutchman
Greg Orlando

[23] *Id.*, at ¶ 89; *see also* ¶ 94.

TAB S

REDACTED FOR PUBLIC INSPECTION

KELLEY DRYE & WARREN LLP

A LIMITED LIABILITY PARTNERSHIP

WASHINGTON HARBOUR, SUITE 400

3050 K STREET, NW

WASHINGTON, D.C. 20007-5108

(202) 342-8400

FACSIMILE

(202) 342-8451

www.kelleydrye.com

NEW YORK, NY

CHICAGO, IL

STAMFORD, CT

PARSIPPANY, NJ

BRUSSELS, BELGIUM

AFFILIATE OFFICES

MUMBAI, INDIA

DIRECT LINE: (202) 342-8544

EMAIL: jheitmann@kelleydrye.com

October 24, 2008

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Developing a Unified Intercarrier Compensation Regime, CC Docket No. 01-92

EX PARTE – REDACTED FOR PUBLIC INSPECTION

Dear Ms. Dortch:

Cavalier Telephone ("Cavalier"), by its undersigned counsel, submits this letter and the attached Declaration of August H. Ankum, Ph.D. and Olesya Denney, Ph.D. of QSI Consulting, Inc. into the record of this proceeding to draw the Commission's attention to the extent to which smaller carriers, such as CLECs, would be undercompensated by rates for intercarrier compensation that exclusively or predominantly reflect operations of much larger carriers, such as Verizon and AT&T.

As Drs. Ankum and Denney explain in detail in their Declaration, there are a number of factors that cause smaller carriers, such as CLECs, to have demonstrably higher costs for originating and terminating traffic. Those factors include the following:

- CLECs do not have the economies of scale and scope of large ILECs.
- CLECs deploy a different network architecture than large ILECs and rely heavily on collocation and transport to reach end users.
- Even in urban settings, CLECs tend to serve a relatively sparse customer base, not unlike rural ILECs.
- Even in urban settings, CLEC customers tend to located at a greater distance from the serving switch, not unlike rural ILEC customers.

- CLECs tend to have significantly higher input costs than large ILECs.
- CLECs are forced to bear costs and risk of significant stand-by capacity for accommodating IXC traffic.

Notably, the impact of these factors is especially pronounced for carriers such as Cavalier Telephone that serve predominantly residential customers – a class of customers that is inherently more costly to serve. In short, size and density characteristics of CLEC networks generate costs much more akin to those of rural and mid-tier ILECs, rather than those of large price cap ILECs such as AT&T and Verizon.

Drs. Ankum and Denney also explain that, to be just and reasonable, any intercarrier compensation rate must be based on a carrier's costs. Because CLECs incur demonstrably higher per-unit costs in terminating and originating traffic than the large ILECs, rates that predominantly reflect the costs of the large ILECs would leave a significant portion of the CLECs' cost unrecovered.

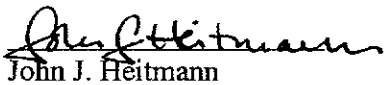
Some commenters have suggested that CLECs should recover their costs of providing exchange access services from end users if intercarrier compensation rates result in below cost exchange access rates for CLECs. Drs. Ankum and Denney explain that this suggestion is misguided for a number of reasons, including the following:

- CLECs do not have nearly as much ability as the large ILECs to recoup network costs by raising the rates for services with flat-rated, non-usage sensitive rates.
- CLECs compete in local exchange markets and must meet or beat prevailing end user prices. This means that they cannot simply increase their rates to recover costs unrelated to the provision of local exchange services.
- Because a much larger portion of CLECs' overall costs are traffic sensitive, any under-recovery of exchange access related costs – *i.e.*, traffic sensitive costs – weighs more heavily on the CLEC than on the ILEC and causes a much larger shift of unrecovered costs to other customers or services.

Drs. Ankum and Denney conclude that there is no valid reason to have the CLECs' end users subsidize the IXCs and their customers through below cost intercarrier compensation rates. Doing so would invariably put CLECs at a huge disadvantage vis-à-vis the large ILECs such as AT&T and Verizon, who as owners of the largest IXCs would be the beneficiaries of having CLECs subsidize IXCs and their customers. Such a dynamic would be pernicious and certainly would undermine local exchange competition.

Kindly direct any questions regarding this letter to the undersigned at (202) 342-8544.

Respectfully submitted,



John J. Heitmann
KELLEY DRYE & WARREN LLP
3050 K Street, N.W.
Washington, DC 20007

Counsel to Cavalier Telephone

cc: Nicholas G. Alexander
Amy Bender
Scott Bergmann
Scott M. Deutchman
Greg Orlando
Dana Shaffer
Don Stockdale
Jennifer McKee
Marcus Maher
Jane Jackson
Al Lewis
Bill Sharkey
Jay Atkinson
Doug Slotten
Claude Aiken
Nicholas Degani
Victoria Goldberg
Lynne Engledow
Alex Minard
Matt Warner
Tom Buckley
Greg Guice
Rebekah Goodheart
Randy Clarke

Redacted for Public Inspection

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of		
	)	
Developing a Unified Intercarrier Compensation Regime	)	CC Docket No. 01-92
	)	

DECLARATION OF
AUGUST H. ANKUM, PH.D. AND OLESYA DENNEY, PH.D.

October 24, 2008

Table of Contents

DECLARATION OF
AUGUST H. ANKUM, PH.D. AND OLESYA DENNEY, PH.D

We, August Ankum, Ph.D., and Olesya Denney, Ph.D. state and depose as follows:

I. INTRODUCTION

1. My name is August H. Ankum, and my business address is 1027 Arch, Suite 304, Philadelphia, PA, 19107. I currently serve as Senior Vice President with QSI Consulting, Inc. ("QSI").

2. My name is Olesya Denney, and my business address is 6100 Cheshire Lane N, Plymouth, MN, 55446. I currently serve as a Senior Consultant with QSI Consulting, Inc. ("QSI").

3. This Declaration was prepared on behalf of Cavalier Telephone. Its purpose is to discuss the extent to which smaller carriers, such as CLECs, would be undercompensated by rates for intercarrier compensation that exclusively or predominantly reflect operations of much larger carriers, such as Verizon and AT&T. As we will demonstrate, there are a number of factors that cause smaller carriers, such as CLECs, to have demonstrably higher costs for originating and terminating traffic. Those factors include:

   - CLECs do not have the economies of scale and scope of AT&T and Verizon.
   - CLECs deploy a different network architecture than AT&T and Verizon and rely heavily on collocation and transport to reach end users.
   - Even in urban settings, CLECs tend to serve a relatively sparse customer base, not unlike rural ILECs.

- Even in urban settings, CLEC customers tend to located at a greater distance from the serving switch, not unlike rural ILEC customers.
- CLECs tend to have significantly higher input costs than AT&T and Verizon.
- CLECs are forced to bear costs and risk of significant stand-by capacity for accommodating IXC traffic.

4. These factors apply particularly to carriers such as Cavalier Telephone that serve predominantly residential customers, which is a class of customers that is inherently more costly to serve.

5. In general, Cavalier provides circuit-switched voice services, VoIP, DSL, and IPTV. Cavalier delivers all of its voice and data services, and its IPTV service, over unbundled and Special Access copper loops obtained from incumbent carriers, such as AT&T and Verizon. In order to optimize network costs, Cavalier has deployed Time-division Multiplexing ("TDM") and IP backbone facilities to transport traffic between fifteen switching centers. The backbone network includes segments of UNE Inter Office Fiber Transport which serves as primary and/or diverse connectivity. Cavalier serves approximately **[Begin Highly Confidential] [End Highly Confidential]** residential customers with about approximately **[Begin Highly Confidential] [End Highly Confidential]** lines; and about approximately **[Begin Highly Confidential] [End Highly Confidential]** business customers over approximately **[Begin Highly Confidential] [End Highly Confidential]** lines. Cavalier has company-wide approximately **[Begin Highly Confidential] [End Highly Confidential]** route miles related to our built network **[Begin Highly Confidential] [End**

Highly Confidential]. We have another approximately **[Begin Highly Confidential] [End Highly Confidential]** route miles of Verizon UNE dark fiber **[Begin Highly Confidential] [End Highly Confidential]**.

6. Cavalier has built out extensive fiber and facilities. Cavalier is *collocated* in 596 ILEC offices requiring *thousands of miles of interoffice transport* to connect back to the *31* switching platforms in its network. The switching fabric consists of 6 Nortel DMS, 9 Lucent 5E, 14 Lucent DRM and 2 Metasoft (softswitch) switches. Cavalier has augmented its TDM based network with IP Gateways on the customer side of the TDM based platforms to provide VoIP services to its customer base.

7. In general, in each state in which it operates, Cavalier Telephone leases a large number of collocation spaces to reach its customers over a large geographic footprint. This architecture, while efficient for a dispersed customer base, involves significant *additional traffic sensitive costs* associated with terminating and originating traffic in the form of transport and collocation investments and expenses.

8. Clearly, Cavalier looks nothing like AT&T or Verizon and its costs of accommodating terminating and originating traffic is naturally very different from AT&T's and Verizon's. To be sure, while Cavalier Telephone's network architecture is optimally efficient for the customer base it serves, it involves demonstrably higher traffic sensitive costs associated with terminating and originating traffic than AT&T's and Verizon's network

architectures. This means that intercarrier compensation rates that predominantly reflect AT&T's and Verizon's costs will leave carriers such as Cavalier Telephone undercompensated for legitimately and efficiently incurred costs.

II. CLECS AND LARGE ILECS ARE DIFFERENTLY SITUATED AND HAVE VERY DIFFERENT COSTS OF TERMINATING TRAFFIC

A. CLECs Do Not Have the Economies of Scale and Scope of Large ILECs and Will Generally Have Higher Per-Minute Costs of Terminating Traffic

9. Regulators, such as the FCC, as well as entities such as the Universal Service Administration Company ("USAC"), have repeatedly recognized that CLECs and small ILECs have higher costs than larger incumbent carriers. Further, the FCC in its *CLEC Access Reform Order* provided a different standard for rural CLECs, noting that higher costs (in this circumstance as a result of rural subscribership) must be recognized within regulated rates.[1]

10. However, it is not the "rural" nature of the cost landscape that makes a network intrinsically high-cost; rather, it is the size and density of the network. And, even though many CLECs may operate in densely populated areas, the nature of their new entrant status generally implies that they serve relatively few customers that are geographically dispersed. In this aspect of their operations, they are much like rural carriers.

---

[1] *In the Matter of Access Charge Reform, Reform of Access Charges Imposed by Competitive Local Exchange Carriers*, Seventh Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 96-262, rel. April 27, 2001, ¶ 65 (hereafter "*CLEC Access Reform Order*").

11. The relationship between *scale economies and costs* is well-recognized in economic theory and by the FCC:

> Fixed costs are the largest portion of the cost of a switch. The average cost of providing service to customers decreases as the number of customers served increases. As a general rule, we find that scale economies are more pronounced when switches operate at full utilization. Because incumbent LEC switches serve the majority of customers for local exchange service, they are likely to be able to take advantage of substantially greater economies of scale than the competitor would using its own switches.[2]

12. Another instance in which the FCC recognized the relationship between size and costs is the following:

> The Commission has recognized that smaller telephone companies have higher local switching costs than larger incumbent local exchange carriers (ILECs) because the smaller companies cannot take advantage of certain *economies of scale*.[3] (Emphasis added.)

13. Elsewhere, the FCC makes similar observations:

> We find that incumbent LECs retain material scale advantages with regard to provisioning and operating local circuit switches. Requesting carriers therefore will encounter generally greater direct costs per subscriber when provisioning their own switches, particularly in the early stages of entry when requesting carriers may not have the large number of customers that is necessary to increase their switch utilization rates significantly. *When we examine the market as a whole, we find that requesting carriers incur higher costs due to their inability to realize economies of scale using circuit switching equipment.*[4]

---

[2] *In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996,* CC Docket No. 96-98, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, FCC 99-238, rel. November 5, 1999, ¶ 258 (*"UNE Remand Order"*).

[3] *National Exchange Carrier Assn., Inc. proposed Modifications to the 1998-99 Interstate Average Schedule Formulas*, Order, 13 FCC Rcd 24225, at n.6.

[4] *UNE Remand Order,* ¶ 260. (emphasis added)

14. The higher switching costs incurred by CLECs also has been recognized in the universal service support context by the USAC. In specifying conditions for high cost support for competitive companies, the USAC notes:

> Local Switching Support (LSS) is available to ***competitive carriers*** providing service in the areas of ***rural incumbent carriers*** serving 50,000 lines or fewer (mostly rate-of-return and some price-cap carriers) and designated as eligible telecommunications carriers (ETCs) by their state commissions or the Federal Communications Commission (FCC).
>
> [...]
>
> Local Switching Support is designed to help carriers recoup some of the high fixed switching costs of providing service to fewer customers. LSS helps keep customer rates comparable to more densely populated urban areas. [5]

15. QSI has examined cost studies for the large ILECs in many states and has prepared cost studies for a number of CLECs. While we are generally unable to publicly divulge details of those studies due to confidentially agreements and concerns, we have filed public testimony demonstrating the substantial discrepancies between large ILECs and CLECs. For example, in a Texas proceeding, QSI provided the following:

> It shows that AT&T Texas sells nearly 13 times more switched access minutes in a year than does McLeodUSA [in Texas]. In other words, in terms of the economies of scale between the two carriers related to this product alone, AT&T Texas dwarfs McLeodUSA. [...] It seems clear that if we were to include in the comparison above, the local calls switched by AT&T Texas, compared to the total minutes switched by McLeodUSA, the disparity would be even larger. The shear overall economies of scale (and scope – i.e. when services other than switched access are considered) make the two companies very poor "comparables"

---

[5] See, USAC website for competitive carriers: http://www.usac.org/hc/competitive-carriers/step01/local-switching-support.aspx (emphasis added).

when evaluating their relative costs of producing switch-based services.[6]

16. Clearly, smaller carriers, such as CLECs, lack the economies of scale of large ILECs and, therefore, have generally higher per unit switching costs (recall that switching costs are a primary building block of exchange access services). Given that CLECs have higher per unit switching costs than large ILECs, it is unfair and likely confiscatory, as a matter of economics, to cap CLEC exchange access rates at the level charged by large ILECs.

B. CLECs and ILECs Have Different Network Architectures and Thus Different Costs

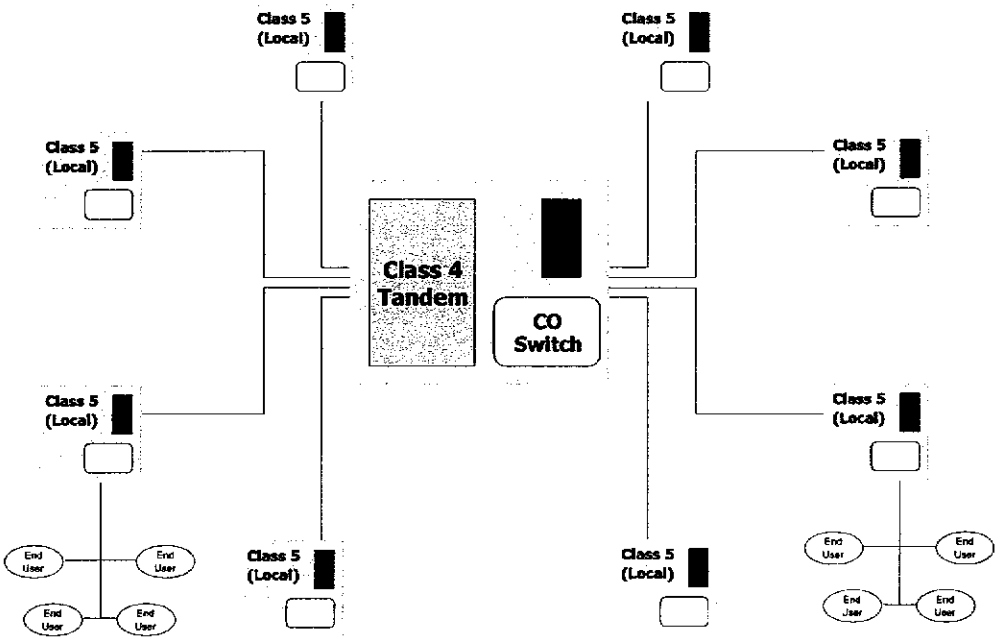
17. As is well recognized, CLECs typically enter the market with a distributed network architecture that is significantly different from that of the ILECs. Under this distributed architecture, CLECs tend to substitute longer transport routes for switching nodes and outside plant facilities, while at the same time providing origination/termination services throughout large geographic areas roughly comparable in size to areas served, for example, by ILEC tandem switches (which aggregate traffic from the ILEC's end office switches).

18. The diagrams below illustrate and compare the two different architectures. The first is the traditional distributed ILEC architecture that uses both Class 5 (end office) and Class 4 (tandem) offices to serve a specific geographic area.

---

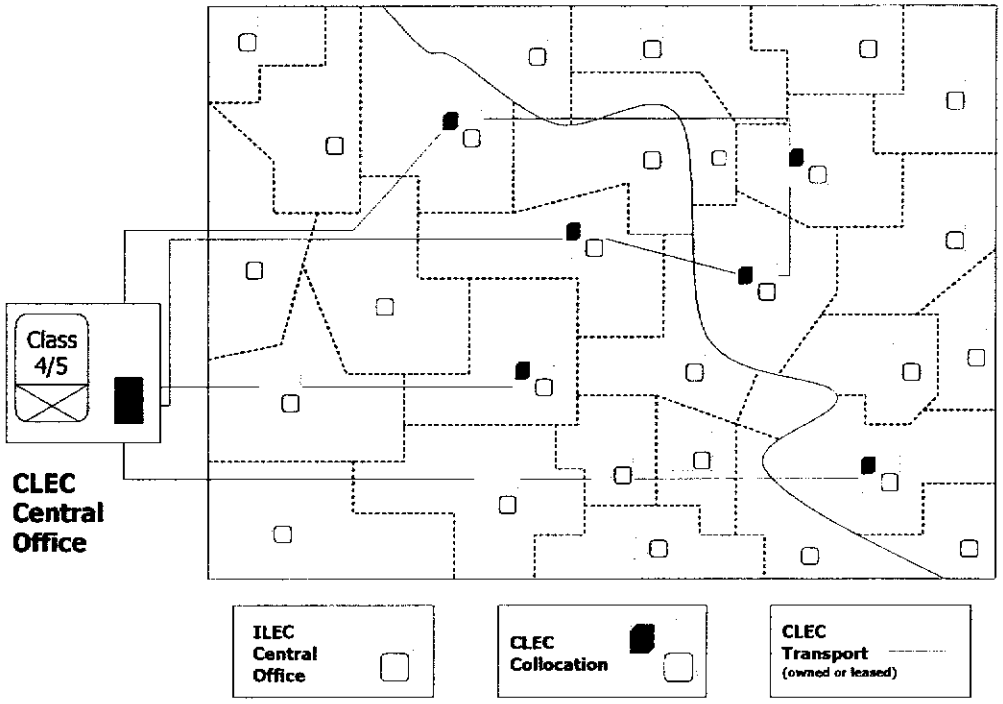
[6] *Application of McLeodUSA Telecommunications Services, Inc., for Approval of Intrastate Switched Access Rates Pursuant to PURA Section 52.155 and PUC Subst. R. 26.223*, SOAH Docket. 473-07-1365, and PUC Docket No. 33545, Rebuttal Testimony of Michael Starkey, at 14.

ILEC Switch Hierarchy



19. The second represents a typical CLEC architecture that uses one switch to serve a comparable geographic area. The CLEC uses one switch for the same area as the ILEC because unlike the ILEC who serves the majority of the customers in the serving area, the CLEC can expect to serve only a fraction of all the customers in the area.

Distributed CLEC Network Design



20. CLECs generally deploy switches that provide a *combined* Class 5 (end office)[7] and Class 4 (tandem)[8] functionality (rather than switches that provide those functionalities on a stand-alone basis) and by means of a distributed architecture provide call origination and termination services across large geographic areas. By extending their switching and transport networks into collocated arrangements in multiple ILEC central offices, CLECs often are able to serve a customer base that is spread out across an entire state or LATA using a single, integrated end office and tandem switching platform.

---

[7] Class 5 (end office) switches typically aggregate the traffic of end user customers over end user loops, which terminate at the switch. They also provide the vertical features, such as call waiting, etc.

[8] Class 4 (tandem) switches are typically used to aggregate the traffic from end office switches and provide a point in the ILEC network at which IXCs can connect for terminating and originating long distance calls.

21. The cost advantages of this architecture are that it minimizes the amount of switching and central office investment required to serve a more *dispersed customer base*, both by minimizing the number of Class 5 local switches required as well as reducing the need for a stand-alone tandem switch. However, the tradeoff is that this network architecture requires additional investments in transport and collocation. Given that most of the costs of these components are *traffic sensitive* costs, the CLEC network architecture will increase the *traffic sensitive costs* of inter-carrier traffic, which should be recognized in exchange access rates.

22. Appropriate rates for intercarrier compensation should properly reflect differences in the costs of terminating and originating traffic between large ILECs (e.g., AT&T and Verizon) and CLECs stemming from differences between the ILECs' and the CLECs' network architectures and cost structures.

C. CLECs Generally Experience Lower Levels of Utilization for Switching and Transport Facilities

23. To the extent that CLECs have typically purchased large switches, such as a Lucent 5ESS or Nortel DMS500, capable of serving as many as one hundred thousand customers, they are typically unable to achieve full utilization. Likewise, the SONET facilities constructed to transport traffic to end-users and other carriers are often capable of carrying huge volumes of traffic. Unlike ILECs, even efficient CLECs must deploy these facilities prior to having sufficient numbers of customers to achieve the utilization for which

the facilities are designed. This means that, over much of their economic life, the utilization of CLEC facilities is substantially below full capacity, and below the utilization experienced by ILECs.

24. In contrast, when an ILEC installs or has installed a new digital switch, it does so to replace an old, existing analog switch that is already serving a large number of customers. In fact, old analog switches, such as the 1AESS, may serve tens of thousands of customers that may very well be comparable to the number of customers that a fully loaded digital switch serves (though the analog switch cannot provide the same functionalities). This means that from the moment the ILEC installs a digital switch, it will be able to achieve a higher rate of utilization relative to a new entrant.

25. The ILEC is also capable of achieving high utilization rates on existing digital switches in wire centers that are experiencing growth. In such situations, the ILEC will often grow the digital switch by installing additional switch modules in the same central office, or it will place remotes that are served by the existing host switch. In either case, the overall level of switch utilization will be high. The same is true for ILEC transport facilities. Here too, ILECs reap the benefit of having a mature network that serves a large, existing customer base so that new facilities can be added incrementally as new demand is anticipated to materialize.

26. This means that even though a CLEC may employ ***optimally efficient***, state-of-the-art facilities, they are likely to experience ***average utilization rates*** –

over the economic life of the facilities – below those experienced by the larger ILECs. This is an economic fact.

27. While some of this effect may be mitigated by the introduction of softswitches, both CLECs and ILECs will continue to use their circuit switches for the foreseeable future. Further, the deployment of softswitches poses its own problems that stem from the peripheral equipment required for the integration of softswitches into the circuit switch based public switched network.

28. For example, softswitches require such peripheral components, as multiplexers, routers, application servers, policy servers, signaling gateways and session border controllers. Without each of these components, softswitches can neither originate nor terminate calls to an outside network.

29. As a result, while Cavalier uses 29 circuit switches, it has deployed only 2 softswitches.

D. CLECs Share More Characteristics with Rural or Mid-tier ILECs than They Do with the Large ILECs

30. This section demonstrates that CLECs have far more in common with rural or mid-sized ILECs than they do with large ILECs, such as AT&T, Verizon or Qwest. In light of this conclusion, comparing CLEC exchange access rates to those of the vertically-integrated large ILECs in an attempt to determine whether CLEC exchange access rates are too high is, at least from an economic perspective, a complete non-starter. If any comparison is to be made to judge the reasonableness of CLEC exchange access rates, it would be

more appropriate to compare CLEC rates to those of mid-sized and small ILECs.

i. CLECs Tend to Serve a Sparse Customer Base

31. By and large, CLECs operate and compete with large ILECs, such as AT&T and Verizon, in urban or suburban environments that are densely populated. However, while a high population density in these areas translates into a dense customer base for the large ILECs, the CLEC customer base is typically far more dispersed.

32. Once CLECs enter a particular geographic market, they tend to serve customers over an area that is roughly comparable to the local calling areas of the ILEC. However, due to their status as new entrants, among other factors, CLECs will only serve *a fraction* of the customers in these areas. Thus, if a CLEC's customer base is expressed on a customer-per-square mile basis, it is very sparse relative to that of the ILECs that serve the vast majority of customers in the same area.

33. While the nature of CLECs as new entrants to the market intuitively suggests that their customer density is lower than the customer density of the incumbents, actual empirical evidence is lacking because of the proprietary nature of the CLEC line count data. Although the FCC reports statewide line counts for CLECs and ILECs in its *Local Competition Report*, these data provide information only on the combined line counts of CLECs at a state

level and does not indicate customer density for an *individual* CLEC within its serving territory.[9]

34. QSI obtained permission from several of its CLEC clients to analyze their end user customer line count density data and report the results in aggregate (to preserve the anonymity of individual carriers). The basic design of the study was to construct a measure of customer density of an average individual CLEC within its serving territory (where the CLEC serving territory is defined as the ILEC's wire centers in which the CLEC is collocated) and compare it to the customer density of the respective ILEC. This study consisted of the following steps:

1. The starting point of this analysis was a data set in which individual CLEC line counts were reported by ILEC wire center in which the CLEC is collocated.
2. This information was combined with the ILEC switched line counts and the serving area (square miles) of the same wire centers.[10]

---

[9] Because the combined CLEC line counts and shares reported in the FCC *Local Competition Report* are lower than the ILECs' line counts and shares (and there are a number of CLECs operating in each incumbent's territory), it is clear that the underlying CLEC-specific customer density is significantly less that the customer density of the incumbents in which territories CLECs operate. For example, in its most recent *Local Competition Report* (released in December 2007) the FCC reports that the CLEC share is on average 17% nationwide, and the highest CLEC share (46%) is observed in Rhode Island. However, the Rhode Island's relatively high CLEC market share is based on 21 CLECs and one ILEC, meaning that most, if not all, CLECs in Rhode Island are likely much smaller than the ILEC. (The market shares in this example are from the FCC *Local Competition Report* released in December 2007, Table 7, and the number of reporting carriers are from Table 13.)

[10] The ILEC line counts are based on the following public data sources: Qwest's line counts are its 2007 business and residential line counts reported in its online Iconn database. The most recent public data source for wire center level line counts of other ILECs is the FCC Synthesis Model (the 2000 model results available at the FCC web site). While it is likely that the ILEC line counts (and hence, customer density) decreased compared to 2000, the difference between the CLEC and ILEC customer density (when based on the ILECs' 2000 line counts) is too significant (as shown on charts below) to be erased if the more recent ILEC line count is used. Further, because the 2000 Synthesis Model line counts are close in the vintage date to the date of the FCC CLEC Access order (the order that set the benchmark for CLEC access charges), the use of 2000 line counts is fair. Finally, the ILEC customer density calculated using the 2000 switched line data does not fully capture today's customer base of the ILECs because it excludes the ILECs' special access, Internet (DSL) lines, long-distance customers and video customers.

3. Customer density for CLECs and ILECs was calculated for each wire center in which the CLECs are collocated.
4. Wire center level information was aggregated to the state level and an average (composite) CLEC was compared to the corresponding ILEC.
5. State-level data were compared across states within each ILEC's territory[11] and the minimum, maximum and average customer densities were recorded.[12]

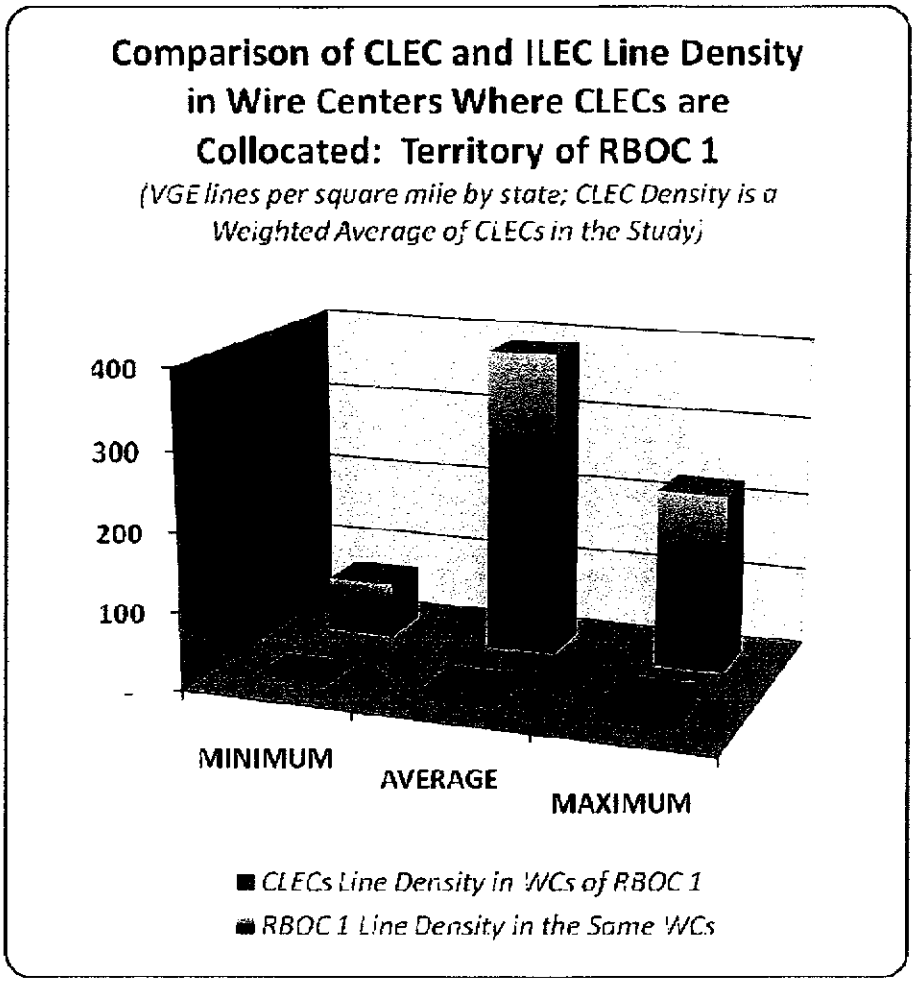
35. The results of this analysis are presented in the following two charts (based on a Voice Grade Equivalent or VGE basis):[13]

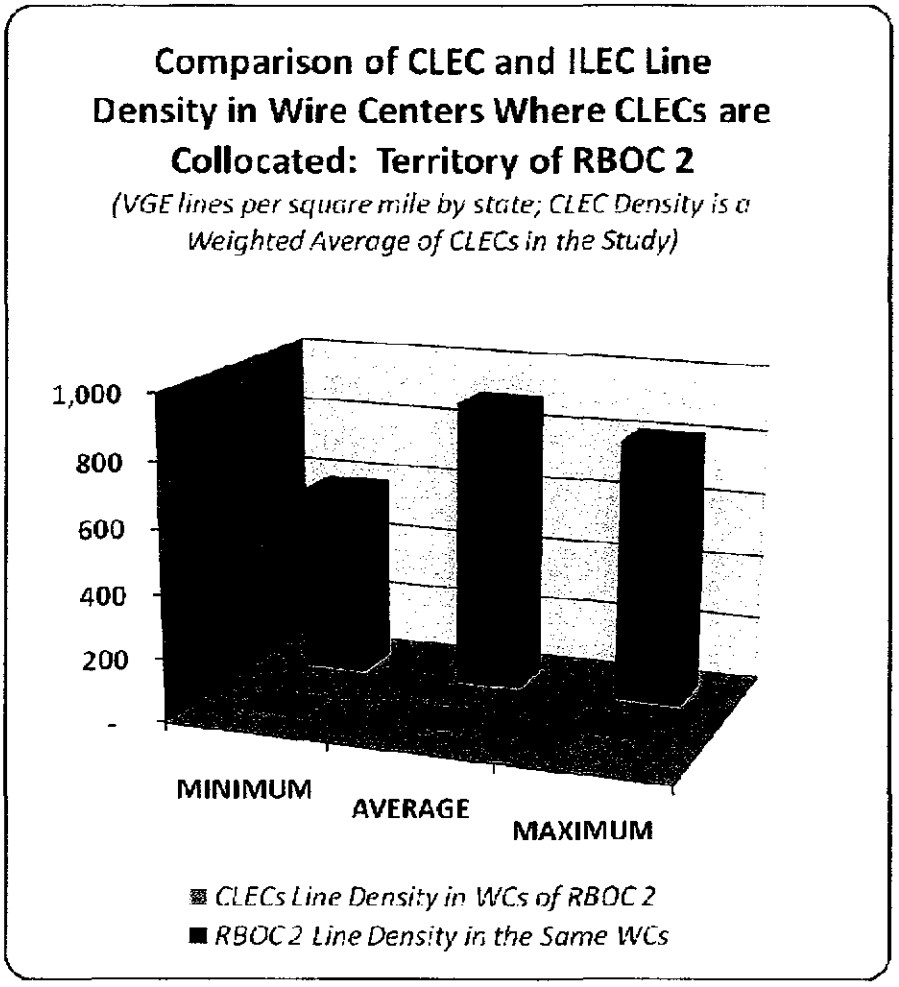
---

[11] Because of the data limitations, this analysis was performed for the territory of two (out of three) RBOCs.

[12] While the "RBOC Average" corresponds to the RBOCs' average across all wire centers/states, the "RBOC Minimum" and "RBOC Maximum" are the measures of RBOC density in wire centers where the Minimum and Maximum CLEC densities are observed. In other words, while the RBOC may have the maximum customer density in state A, the CLEC may have the maximum customer density in state B. In this case the chart depicts the RBOC and CLEC customer densities in state B.

[13] As explained above, in order to preserve the data confidentiality, the operating territories are identified simply as "RBOC 1" and "RBOC 2."


Comparison of CLEC and ILEC Line Density in Wire Centers Where CLECs are Collocated: Territory of RBOC 1
(VGE lines per square mile by state; CLEC Density is a Weighted Average of CLECs in the Study)
400
300
200
100
-
MINIMUM
AVERAGE
MAXIMUM
CLECs Line Density in WCs of RBOC 1
RBOC 1 Line Density in the Same WCs



36. These two charts demonstrate that in both territories (the territories of RBOC 1 and RBOC 2), an individual CLEC's customer density is significantly lower than the customer density of the corresponding RBOC. This observation is true on average and at the extremes. Numerically, the gap between the average customer density depicted in the above charts (the relative heights of the "Average" bars) is as follows: An individual CLEC's customer density is 24 times lower than the incumbent's density in the territory of RBOC 1, and 35 times lower than the incumbent's density in the territory of RBOC 2. The

following table lists these results (column (c)), along with an additional data point, which is RBOC's statewide customer density (column (d)):

Average Line Densities: CLECs versus RBOCs *(VGE lines per sq. mile)*

Territory	Wire Centers with CLECs' Collocations			RBOC Statewide (Same States)
	Average Line Density per CLEC	RBOC Line Density	Ratio: RBOC Density Over CLEC Density	RBOC Line Density
Column	(a)	(b)	(c)	(d)
RBOC 1	16	389	*24*	50
RBOC 2	25	893	*35*	158

37. This table shows that a CLEC's average customer line density (column (a)) is lower than the incumbent's density when the comparison is performed in the wire centers where the CLECs operate (which may be relatively more urban/dense wire centers) as well as when the CLEC's line density is compared to the ILEC's statewide line density (column (d)) which accounts for the ILECs' rural areas.

38. Another data source that supports our findings is a recent study of CLEC line counts in the Minneapolis-St. Paul Metropolitan Statistical Area ("MSA") conducted by the Minnesota Department of Commerce and filed in Ex Parte Comments of the Minnesota Public Utilities Commission in the FCC docket WC No. 07-97.[14] This study represents a fairly comprehensive survey of CLEC line counts in the Minneapolis-St. Paul MSA as it contains aggregate

[14] Ex Parte Comments of the Minnesota Public Utilities Commission dated February 8, 2008 in FCC docket WC No. 07-97 *In the Matter of Petition of Qwest Corporation Pursuant to 47 U.S.C. para. 160(c) in the Minneapolis/St. Paul Metropolitan Statistical Area* (Qwest's Forbearance Petition).

line counts of ten major CLECs in the state.[15] QSI combined the line counts reported in this study with Qwest's publicly available switched residential and business line counts to derive average line densities for CLECs and Qwest in the Minneapolis-St. Paul MSA's wire centers. The resulting line densities[16] are contained in the table below:

Average Line Densities in Minneapolis/St. Paul MSA: CLECs versus Qwest

(Lines per Sq. Mile)

Wire Centers in Minneapolis/St. Paul MSA			All MN Qwest Wire Centers
Average Line Density per CLEC		Qwest Line Density (Switched Lines)	Qwest Line Density (Switched Lines)
Mass Market	Mass Market and Enterprise Market		
3	**16**	**429**	**73**

39. This table shows the gap between the average line density of the ten CLECs in the Minneapolis-St. Paul MSA and Qwest. This magnitude of this gap is striking, even when enterprise CLEC counts are included. (Compare the CLEC density of 16 lines per square mile with Qwest's density of 429 lines per square mile in the same wire centers). What's more, the CLEC line density is several times lower than Qwest's statewide line density despite the fact that the later measure includes more rural/sparsely populated areas of Minnesota.

---

[15] The ten CLECs include AT&T/TCG, Covad, Eschelon, Integra, MCImetro, McLeodUSA, Onvoy, Popp, TDS Metrocom and XO.

[16] Note that this measure of CLEC line density is different from the measure used in QSI's analysis of CLEC proprietary data because the MN PUC Ex Parte contained only CLEC-total line counts for each wire center, while each individual CLEC may not be present in each wire center.

40. To summarize the analysis of line densities, CLECs' customer densities are significantly smaller than the RBOCs' customer densities in markets where they compete. Although a lack of data does not permit a full analysis of customer density for mid-size/rural ILECs, the following observations made by Windstream in the recent Texas USF case[17] illustrate the relationship between RBOCs, CLECs and mid-size ILECs in terms of customer densities: AT&T has 94 access lines per square mile in Texas, Embarq has only 27 lines, and Windstream has only 7 lines per square mile.

41. As regulators know from TELRIC and other cost proceedings, customer density is a major cost driver in cost studies. Higher customer density means that certain costs are lower and vice versa. In fact, it is in recognition of this close relationship between customer density and ILEC costs that most regulatory commissions have established different rate zones for UNE rates in TELRIC proceedings, such as urban, suburban and rural rate zones; *i.e.*, rate zones in large part coincide with customer density. Thus, given that the customer bases of CLECs are sparser (or less dense) relative to say, AT&T and Verizon (even in geographic regions in which CLECs compete with AT&T and Verizon), the CLECs' costs are higher on a per unit basis. This effect is partially moderated by the fact that CLECs tend to use the ILECs' UNE loops at TELRIC prices that reflect the ILECs' costs. However, these UNE loops are typically aggregated in collocation arrangements at the ILECs' central offices; from these collocation arrangements, the CLECs then require

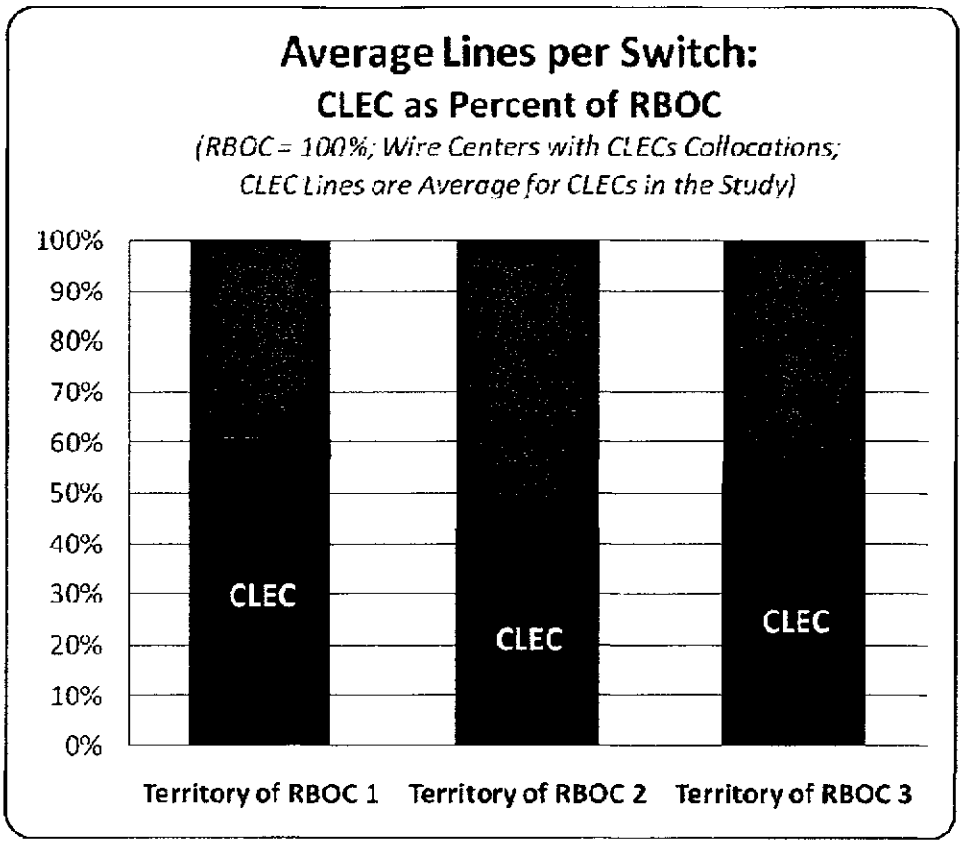
[17] Texas PUC case No. 34723, Direct Testimony of William F. Kreutz (Windstream), November 30, 2007, at 16.

transport facilities from the ILEC central offices to the CLECs' switch locations. The cost of these transport facilities *are* part of the usage sensitive costs of switched access. They are also costs not incurred in the same manner by ILECs and reflect the fact that the CLECs' have a *sparser* customer base.

42. The CLECs' networks reflect the low density of their customer bases. Only when their customer base approaches the ILECs' in terms of customer density, would CLECs deploy more switches to cover certain geographic areas and fewer transport facilities. The use of more switches for certain geographic areas would be economically justified by the larger number of customers. Until that time, CLECs need to aggregate customer loops over larger geographic areas. This also means that they incur more transport costs (for the transport facilities used to connect the UNE loops to their switches.)

43. Another consequence of low customer density is that CLEC switches often support *fewer* lines than ILEC switches despite the fact that a CLEC's switch aggregates traffic over a large territory. QSI made this observation while analyzing the above discussed proprietary line count data of its client CLECs. The following chart depicts this finding:[18]

[18] As explained above, in order to preserve the data confidentiality, the operating territories are identified simply as "RBOC 1," "RBOC 2" and "RBOC 3."



44. This chart depicts average CLEC lines per CLEC switch (blue bars) as a percent of RBOC lines per RBOC switch, and shows that an average CLEC has less lines per switch than an RBOC in which territory the CLEC operates. Thus, even though the CLEC switch may aggregate customers over a larger area than RBOC switch, the CLEC switch will still experience lower levels of utilization.

ii. CLEC Customers Tend to Be Located at a Greater Distance from the Serving Switch than ILEC Customers

45. Some of the shortest loops for ILECs are found in their densely populated urban serving areas. Even in those densely populated areas, however, CLEC customers tend, on average, to be located farther from the CLEC's serving

central office relative to the distance ILEC customers are from the ILEC central office.

46. The distributed network architecture employed by CLECs allows customers at great distances from the central office to be connected via transport facilities. CLECs lease existing ILEC loops running between the end user customer's premise and the ILEC's serving central office. When unbundled loops are used, the CLEC still needs to carry the calls generated over those end-user loops with ***transport facilities*** from the ILEC's serving central office, either directly all the way to the CLEC's own switch or to an "intermediate" ILEC central office where the CLEC has collocated its equipment and then to the CLEC's switch.

47. The fact that CLECs have longer loops does not necessarily warrant higher access rates, but the fact that these longer loops involve additional traffic sensitive costs related to the *collocation facilities* and *transport components* does. It is important to note that these additional costs for transport and collocation functions are traffic sensitive costs[19] and that they are associated with terminating and originating exchange access traffic. Thus, given that these costs would be incurred even by an optimally efficient CLEC, these costs are legitimate costs to be recovered.

48. Traditionally in public utility regulation, the notion of just and reasonable rates involves a reasonable opportunity for carriers to recover their reasonable

[19] Many collocation costs are usage sensitive in the same way that trunk ports on a tandem switch are usage sensitive: the larger is the volume of calls, the more trunking facilities will terminate in the collocation space and the more terminating facilities, floor space and power are needed.

costs. If the standard is set, however, at a level at which even an optimally efficient carrier is unable to recover its reasonable costs, then those rates, as a matter of economics, cannot be just and reasonable.

E. CLECs Tend to Have Higher Input Costs than the Largest ILECs

49. Large buyers typically are able to extract better input prices from suppliers than small buyers. AT&T and Verizon, as the nation's largest telecommunications firms, are also the nations' largest purchasers of telecommunications equipment. This gives them significant bargaining power and they are able to negotiate discounts by shifting the bulk of their purchases to the supplier that is willing to offer the best deal. Regulators are well aware of those discounts and have examined them in various proceedings in which large ILEC costs are at issue.[20]

50. Given that one of the most important determinants of costs of a service is the price of the inputs used to provide that service, CLECs will invariably have higher costs associated with exchange access services than the large ILECs. As input prices increase, so does the cost of service. In fact, the relationship between the level of input prices and the costs that are to be calculated is almost linear in the sense that if input prices double, then one should expect

---

[20] *See, e.g.*, California Public Utilities Commission *Rulemaking on the Commission's Own Motion to Govern Open Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carrier Networks, Investigation on the Commission's Own Motion into Open Access and Network Architecture Development of Dominant Carrier Networks*, Decision 06-03-025, Rulemaking 93-04-003; Investigation 93-04-002 (Verizon UNE Phase), Dated March 15, 2006; *see also*, Illinois Commerce Commission Docket No. 02-0864 Order *Illinois Bell Telephone Company Filing to Increase Unbundled Loop and Nonrecurring Charges*, Dated June 9, 2004; and Georgia Public Service Commission Docket No. 14631-U *In RE: Review of Cost Studies, Methodologies, Pricing Policies, and Cost Based Rates for Interconnection and Unbundling of BellSouth Telecommunications, Inc.'s Services*, March 18, 2003.

the costs to double. The table below illustrates this relationship for a hypothetical facility, following a traditional layout for a cost study. As can be seen from the table, when hypothetical input prices are $100, the monthly cost is calculated to be $3.33; when input prices double (*i.e.*, increase to $200), then the monthly cost doubles as well.

EF&I Facilities[21]	Fill Factor	ACF[22]	Monthly Costs
(a)	(b)	(c)	((a)/(b)x(c))/12
$100	80%	0.32	$3.33
$200	80%	0.32	$6.67

51. By contrast, the CLECs are much smaller and purchase fewer facilities and equipment than do, say, AT&T and Verizon. As a result, CLECs do not have the bargaining power of the large ILECs to induce suppliers to offer substantial discounts or to bid against one another. In short, CLECs' input prices tend to be higher than those of the largest ILECs, such as AT&T and Verizon.

52. Furthermore, the prices of major inputs used by CLECs in the provisioning of exchange access – inputs that CLECs purchase from large ILECs – have been increasing. Competitive carriers purchase much of their transport and loop capacity supporting switched access services directly from AT&T, Verizon and Qwest in the form of special access services and UNEs. In many

[21] The term "EF&I" refers to the engineered, furnished and installed investment in facilities.

[22] The term "ACF" means annual cost factor, a factor used to convert the EF&I investment into an annual recurring cost stream. When these annual costs are divided by 12, they become monthly recurring costs.

circumstances, these fees paid by the CLECs can constitute as much as 40% to 60% of their overall cost structure.

53. Since the FCC originally issued its *CLEC Access Reform Order* in 2001, prices paid by CLECs to purchase loops and transport services from the large incumbents have increased substantially, more than doubling within some companies. These increases result largely from the fact that AT&T, Verizon and Qwest have used increased pricing flexibility granted by the FCC to increase special access prices in critical markets while at the same time limiting access to less-costly UNE products per the FCC's non-impairment standards set forth in its *Triennial Review Remand Order*.

54. Yet, even as the large ILECs increase prices for dedicated capacity, they are at the same time advocating that regulators impose on CLECs intercarrier compensation rates – that their affiliated IXCs pay when they use those facilities to originate or terminate toll traffic – that are demonstrably below cost.

55. In sum, even if a CLEC had a customer base identical to the large ILECs' in terms of customer densities (though not size), a network architecture identical to the large ILECs (though smaller), and ran its operations with the same level of efficiency, the CLEC's costs associated with providing switched access services would still be higher than the large ILECs' because it pays *higher prices* for its network facilities than do the large ILECs.

F. CLECs Are Forced To Bear the Capacity Risks for Accommodating IXC Traffic

56. One important aspect of intercarrier compensation, and specifically of the exchange access provider / IXC relationship, is often overlooked: exchange access services that are sold on a traditional per minute-of-use basis forces the provider of exchange access services to bear all of the *capacity risk* associated with deploying fixed capital.

57. Traditional switched access arrangements allow interexchange carriers to purchase access to local networks on a "minute-at-a-time" basis without any commitment as to volume or term. This structure is largely a vestige of the post-divestiture marketplace where the FCC and Judge Green were attempting to protect fledgling long distance providers from the extreme economies AT&T could expect to enjoy when purchasing enormous switched access volumes from its prior Bell System brethren.[23] If all carriers could purchase a minute of switched access for the same price, AT&T was restricted from negotiating substantially better prices based upon its tremendous volumes. Today, long distance providers still largely enjoy the ability to terminate or originate calls on competitive local networks without the requirement that

[23] As the FCC noted: "Prior to the FCC's 1993 restructuring of local transport rates, LECs recovered their transport costs through a rate structure based on the "equal charge per minute of use" requirement in the Modification of Final Judgment (MFJ). The "equal charge per minute of use" rule required that the Bell Operating Companies charge an equal amount per unit of traffic for delivery or receipt of traffic of the same type between end offices and IXC POPs within an exchange area. This approach essentially required all interstate access service customers to pay averaged rates. The actual type of facilities --voice grade, DS1, or DS3 -- that were used to transport a customer's traffic between the IXC POP and the LEC serving wire center did not affect the charges that were assessed, because the rates were usage-sensitive and, generally, distance sensitive. Under the terms of the MFJ, the equal charge rule expired on September 1, 1991." *See, In the Matter of Transport Rate Structure and Pricing Resale, Shared Use and Split Billing*, Report and Order, CC Docket No. 91-213, Adopted February 27, 1998, para. 3.

they purchase some minimum capacity or minutes of use volume. Unfortunately, that rate structure forces CLECs to invest in stand-by capacity sufficient to accommodate the totality of switched access traffic it may need to support, without any commitment or joint-planning that ensures they recover the costs of installing that necessary capacity.

58. For example, while AT&T may require 1,000,000 minutes-of-use from CLEC A in Month 1, it may well develop direct connections to large customers or move large amounts of traffic to alternative networks months later leaving the CLEC with investment in substantial capacity that it is now unlikely to recover. In short, CLECs bear substantial capacity risk (and cost) associated with maintaining their networks to accommodate what is largely "casual traffic" from IXCs that CLECs have little ability (physically or contractually) to manage and no assurances that the IXCs will in fact originate or terminate the necessary traffic volumes to recover their investments. While this is generally true for exchange access providers under the existing per minute-of-use exchange access regime, the capacity risks are greater for smaller carriers (like CLECs) because they face lumpier investment when adding new capacity. Those risks result in higher costs that are efficiently incurred and, thus, should legitimately be reflected in CLEC exchange access charges.

59. While it is conceivable that these types of capacity costs could be better managed through arms-length negotiations between IXCs and CLECs, unfortunately, the FCC's *CLEC Access Reform Order* – by establishing a baseline rate equal to the price per minute assessed by incumbent carriers –

gives IXCs little incentive to consider anything more or different. In other words, the ability of CLECs to provide stand-by capacity is fundamentally undermined by intercarrier compensation policies that forces CLECs to provide exchange access services at rates that are generally not compensatory.

III. THE TOUCHSTONE FOR JUST AND REASONABLE RATES IS COST

60. It is standard practice in public utility regulation to either explicitly or implicitly examine rate-setting practices against the backdrop of the regulated firm's costs. This is true whether the discussion concerns traditional rate of return regulation or other forms of regulation. As the United Supreme Court noted:

> The enduring feature of ratesetting from *Smyth v. Ames* to the institution of price caps was the idea that calculating a rate base and then allowing a fair rate of return on it was a sensible way to identify a range of rates that would be just and reasonable to investors and ratepayers. [24]

61. For the better part of the twentieth century, much of public utility regulation, and certainly the regulation of telecommunications utilities, involved traditional rate-base/cost-of-service regulation. While allocations of costs across various customer classes and jurisdictions (such as intrastate and interstate) might have been impacted by universal service policies, the ultimate basis for rates and revenues was costs. Even as telecommunications regulation moved away from traditional rate-base regulation in the latter part

[24] *See Verizon v. FCC*, 535 U.S. at 487-88.

of the twentieth century, the FCC continued to emphasize costs as the relevant benchmark for just and reasonable rates. The notion that costs have been and remain the ultimate benchmark for just and reasonable rates is generally recognized and is evinced by such FCC statements as:

> The Communications Act requires that rates be just and reasonable and not create unreasonable discrimination or undue preference. Section 201(b) and 202(a), 47 U.S.C. §§ 201(b), 202(a). [...] ***Costs are traditionally and naturally a benchmark for evaluating the reasonableness of rates.***[25]

62. About a decade later, after the passage of the Telecommunications Act of 1996, the FCC reiterated the identical notion and language:

> [C]osts are traditionally and naturally a benchmark for evaluating the reasonableness of rates under Section 201(b) of the Act.[26]

63. The linkage of costs with just and reasonable rates typically runs through FCC orders involving rate setting issues, particularly where it concerns carriers accessing one another's facilities. For example, in its 1997 *Expanded Interconnection Order*, the FCC, in line with its long standing tradition, again established costs as the appropriate benchmark for just, reasonable and nondiscriminatory rates:

> It is clear that the success of efficient competitive entry through interconnection depends on the interconnectors' ability to obtain access to the LEC's transmission facilities ***at rates that reflect costs*** under terms, and conditions that are ***just and reasonable***. Pursuant to sections ***201 through 205*** of the Communications Act of 1934 ... we are using the tariff review process to ensure that LECs provide interstate expanded interconnection service at rates,

---

[25] *Investigation of Special Access Tariffs of Local Exchange Carriers*, Memorandum Opinion and Order, 4 FCC Rcd 4797, 4799, ¶ 32 (1988) ("*Special Access Tariff Order*"). (emphasis added)

[26] *In the Matter of INFONXX, Inc., Complainant, v. New York Telephone Co., Defendant.* Memorandum Opinion and Order, 13 FCC Rcd 3589, 3597, ¶ 15 (1997).

> terms and conditions that are just, reasonable and nondiscriminatory.[27]

64. The FCC's approach is consistent across various arenas of its jurisdiction. For example, in 2004, in evaluating whether rates charged by certain international carriers were "just and reasonable," the FCC again evaluated costs of providing the services:

> The Commission determined that ***above-cost settlement rates*** paid by U.S. carriers to terminate international traffic are neither ***just nor reasonable***, and it acted pursuant to its statutory authority in Section 201(b) of the Communications Act to prohibit U.S. carriers from continuing to pay such charges.[28]

65. Many other examples of FCC statements to this effect exist. In sum, the FCC has well established that the term "just and reasonable" is inherently tied to costs.

66. As demonstrated, CLECs incur demonstrably higher per-unit costs in terminating and originating traffic than the large ILECs and rates that predominantly reflect the costs of AT&T and Verizon would leave a significant portion of the CLECs' cost unrecovered. This is unfair and possibly confiscatory. When the FCC established the price cap regime for LECs, it explicitly recognized that below-cost rates might be confiscatory:

> [A] price cap LEC may petition the Commission to set its rates above the levels permitted by the price cap indices based on a

---

[27] *In the Matter of Local Exchange Carriers' Rates, Terms, and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport*, Second Report and Order, 12 FCC Rcd 18730, 18733, at ¶ 2 (1997) ("*Expanded Interconnection Order*") (emphasis added).

[28] *In the Matter of International Settlements Policy Reform International Settlement Rates*, First Report and Order, 19 FCC Rcd 5709, 5742, ¶ 74 (2004) (emphasis added).

> showing that the authorized rate levels will produce earnings that are *so low as to be confiscatory.*[29]

67. Clearly, below costs rates for CLECs would likewise, as a matter of economics, "produce earnings that are so low as to be confiscatory."

68. Last, the notion that a unified intercarrier compensation rate may simulate a competitive market price, justifying below costs rates for some carriers, is wrong. Companies in competitive industries have the option of scaling back their operations when prices for a particular set of products fail to compensate them for their costs. This is not true for CLECs. CLECs have an obligation to accommodate *all* intercarrier traffic, which means that short of existing the market altogether they *cannot* scale back their operations – as competitive companies do – when intercarrier compensation rates fail to compensate them for the costs.

IV. CLECS SHOULD NOT BE ASKED TO SHIFT UNDER-RECOVERED TRAFFIC SENSITIVE COSTS ONTO END USERS

69. Some advocates of a unified intercarrier compensation rates have suggested that CLECs should recover their costs of providing exchange access services from end-users if intercarrier compensation rates result in below cost exchange access rates for CLECs. This suggestion is misguided for the following reasons.

---

[29] *Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers*, CC Docket Nos. 96-262 and 94-1, Sixth Report and Order, *Low-Volume Long Distance Users*, CC Docket No. 99-249, Report and Order, *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Eleventh Report and Order, 15 FCC Rcd 12962 (2000) (hereafter "*CALLS Order*"), ¶ 17.

70. First, this suggestion ignores the fact that the CLECs do not have nearly as much ability as the large ILECs to recoup network costs by raising the rates for services with flat-rated, non-usage sensitive rates (like monthly local telephone service). ILECs still have a large base of customers with inelastic demand whose prices they can raise without significant demand repercussions.[30] This is not true for CLECs.

71. CLECs compete in local exchange markets and must meet or beat prevailing end user prices. This means that they cannot simply increase their rates to recover costs unrelated to the provision of local exchange services. That is, aside from the fact that such a cross-subsidy is unjustified, markets dynamics won't tolerate it.

72. Further, forcing CLECs to recoup from end users certain under-recovered costs, associated with terminating or originating traffic for IXCs, would slant the playing field. Clearly, IXCs and their customers are the cost causers; this is particularly true for calls that terminate on the CLECs network and are placed by the IXCs customers, such as calls from telephone solicitors, etc. So, while there is no valid reason to have the CLECs' end users subsidize the IXCs and their customers through below cost intercarrier compensation rates, to do so nevertheless will invariably saddle CLECs with a disadvantage that may disproportionally handicap them vis-à-vis AT&T and Verizon, who as

[30] There are many instances in which ILECs reduced switched access rates and in return were allowed by state commissions to increase local rates on *inelastic* residential retail customers. For example, precisely such an arrangement applied to Verizon Massachusetts per MA DTE 01-31, under which Verizon Massachusetts was permitted to raise approximately $50 Million in revenues from its inelastic retail customers in return for switched access rates reductions. Again, CLECs do not have such customers.

owners of the largest IXCs would be the beneficiaries of having CLECs subsidize IXCs and their customers. The dynamic is pernicious and will undermine local exchange competition.

73. Further, as explained above, the typical CLEC network architecture generates more traffic sensitive costs than the ILEC network architecture. This is true because CLECs deploy relatively more transport facilities than ILECs and they require collocation facilities. The costs of both transport and collocation facilities tend to be traffic sensitive. Further, much of the CLECs' traffic is off-net traffic. The combined effect is that a much larger portion of CLECs' overall costs are traffic sensitive. This also means that any under-recovery of exchange access related costs – i.e., traffic sensitive costs – weighs more heavily on the CLEC than on the ILEC and causes a much larger shift of unrecovered costs to other customers or services.

74. Last, the recommendation falsely suggests that ILECs are doing the same. However, ILEC exchange access rates have *not* explicitly been set below the ILECs' costs of providing exchange access services. To the contrary, all indications are that the ILECs' exchange access rates are compensatory. Thus, forcing CLECs to shift under recovered exchange access costs to their end-users puts the CLECs at a severe competitive *dis*advantage in the retail market.

TAB T

REDACTED FOR PUBLIC INSPECTION

KELLEY DRYE & WARREN LLP

A LIMITED LIABILITY PARTNERSHIP

WASHINGTON HARBOUR, SUITE 400

3050 K STREET, NW

WASHINGTON, D.C. 20007-5108

(202) 342-8400

NEW YORK, NY
CHICAGO, IL
STAMFORD, CT
PARSIPPANY, NJ

BRUSSELS, BELGIUM

AFFILIATE OFFICES
MUMBAI, INDIA

FACSIMILE
(202) 342-8451
www.kelleydrye.com

DIRECT LINE: (202) 342-8544
EMAIL: jheitmann@kelleydrye.com

October 24, 2008

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Developing a Unified Intercarrier Compensation Regime, CC Docket No. 01-92

EX PARTE – REDACTED FOR PUBLIC INSPECTION

Dear Ms. Dortch:

NuVox, by its undersigned counsel, submits this letter in response to the AT&T letter filed October 13, 2008 in the above-captioned proceeding.[1] In that letter, AT&T calculates the costs associated with switching voice services utilizing a softswitch and concludes that such costs range from a low of $0.00010 per minute of use to a high of $0.00024 per minute of use.[2] However, AT&T's cost analysis contains numerous methodological, mathematical and sourcing errors resulting in a cost range that substantially underestimates the actual forward looking costs of transporting and terminating telecommunications traffic using a softswitch.

The attached Declaration of August H. Ankum, Ph.D., Keith Coker and James D. Webber identifies errors in AT&T's analysis and provides a corrected calculation identifying per minute softswitch termination costs ranging from $0.00758 to $0.01330, far exceeding AT&T's estimates, as well as the current $0.0007 termination rate set by the Commission for ISP-bound traffic. As Messrs. Ankum, Coker and Webber explain in the Declaration, these corrected cost estimates are more reasonably aligned with realities faced by carriers, like NuVox, that actually deploy softswitches in their networks today.

---

1 Letter from Henry Hultquist, Vice President-Federal Regulatory, AT&T Services, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission, CC Docket no. 01-92 (filed Sept. 13, 2008) ("AT&T Letter").

2 AT&T Letter at 4.

Messrs. Ankum, Coker and Webber explain the basis for their corrected calculations and identify and analyze the errors in AT&T's analysis in the attached Declaration. These errors include mistakes in the calculation of per line costs of softswitches, underestimates of the traffic sensitive portion of softswitches, and underestimates of the annual charge factor used to convert investment amounts into monthly per line revenue requirements. In addition, AT&T's analysis erroneously omits costs associated with necessary ancillary softswitch components, shared and common costs and traffic sensitive costs of transport.

Further, and of particular importance, Messrs. Ankum, Coker and Webber address AT&T's unreasonable assumption that softswitches can be used to terminate all relevant traffic. This assumption simply does not correspond to the reality of the marketplace and is not consistent with the "forward looking, least cost network design" requirements of either a TSLRIC or TELRIC analysis. Indeed, it is ironic that AT&T is basing its cost estimates on a "hypothetical" network configuration of 100% softswitches while it and other large ILECs have consistently highlighted the impropriety of using a "hypothetical" network cost standard.

In response to the ambiguous, if not haphazard, costing approach utilized by AT&T, Messrs. Ankum, Coker and Webber also explain why TELRIC is the appropriate methodology for costing and pricing call termination costs and note that any cost methodology that fails to capture total service demand, as TSLRIC and TELRIC do, would be at odds with the plain language of Section 252(d)(2)(A)(ii): it would simply fail to capture all of the "additional costs" and capture only *some* of the "additional costs."

Messrs. Ankum, Coker and Webber also explain that use of a marginal cost construct would not be appropriate. Marginal cost calculates the additional cost associated with *one and only one* additional unit of output. Clearly, this cost construct is inconsistent – as a matter of economics – with the plain language of Section 252(d)(2)(A)(ii), which speaks not of the additional cost of terminating a single call but of the "additional costs of terminating such calls," *i.e.*, the *costs* of terminating the *total volume* of calls.

Finally, it is important to differentiate the per minute transport and termination costs calculated in this Declaration from the costs presented in NuVox's *Ex Parte* Letter of October 2, 2008. The attached Declaration *corrects* AT&T's analysis of the costs of a softswitch. However, it in no way represents the full "additional costs" incurred by carriers in transporting and terminating calls. For example, neither AT&T's analysis nor NuVox's corrected analysis includes costs for signaling, transport and aggregation facilities in collocation spaces (the importance of these components is discussed in the attached Declaration). For these and other reasons, neither AT&T's costs nor NuVox's corrected costs presented in the current Declaration should serve as a basis for setting intercarrier compensation rates. By contrast, the NuVox *Ex Parte* Letter of October 2, 2008, presents the results of a cost study QSI conducted for NuVox that reflects *all* the "additional costs" of *all* components involved in the transport and termination of calls.

Kindly direct any questions regarding this letter to the undersigned at (202) 342-8544.

Respectfully submitted,

John J. Heitmann
KELLEY DRYE & WARREN LLP
3050 K Street, N.W.
Washington, DC 20007

Counsel to NuVox

cc: Nicholas G. Alexander
Amy Bender
Scott Bergmann
Scott M. Deutchman
Greg Orlando
Dana Shaffer
Don Stockdale
Jennifer McKee
Marcus Maher
Jane Jackson
Al Lewis
Bill Sharkey
Jay Atkinson
Doug Slotten
Claude Aiken
Nicholas Degani
Victoria Goldberg
Lynne Engledow
Alex Minard
Matt Warner
Tom Buckley
Greg Guice
Rebekah Goodheart
Randy Clarke

Redacted for Public Inspection

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of		
Developing a Unified Intercarrier Compensation Regime	)	CC Docket No. 01-92

DECLARATION OF
AUGUST H. ANKUM, PH.D., KEITH COKER AND JAMES D. WEBBER

October 24, 2008

Table of Contents

DECLARATION OF AUGUST H. ANKUM, PH.D., KEITH COKER AND JAMES D. WEBBER

We, August Ankum, Ph.D., Keith Coker, and James D. Webber, on oath, state and depose as follows:

I. INTRODUCTION

1. My name is August H. Ankum, and my business address is 1027 Arch, Suite 304, Philadelphia, PA, 19107. I currently serve as Senior Vice President with QSI Consulting, Inc. ("QSI").

2. My name is Keith Coker, and my business address is 2 North Main Street, Greenville, South Carolina, 29601. I am the Chief Technical Officer ("CTO") for NuVox, Inc. ("NuVox").

3. My name is James D. Webber, and my business address is 4515 Barr Creek Lane, Naperville, Illinois 60564. I currently serve as Senior Vice President with QSI Consulting, Inc.

4. This Declaration was prepared on behalf of NuVox and its purpose is to respond to AT&T's Letter to Marlene H. Dortch, Secretary, Federal Communication Commission filed in these proceedings on October 13, 2008 (hereafter referred to as the "AT&T Letter" or "AT&T's Letter").[1]

5. In its Letter, AT&T estimates "the incremental cost of switching a voice minute using [a] softswitch"[2] and arrives at a range of $0.00010 per minute of

---

[1] AT&T's Letter was signed by Henry Hultquist, Vice President-Federal Regulatory, AT&T Services, Inc.

[2] AT&T Letter at 2.

use on the low end and $0.00024 on the high end. This range, in AT&T's opinion, supports termination rates "comfortably below the Commission [*sic*] current [reciprocal compensation] figure of $0.00070 per minute."[3] While AT&T admits that reciprocal compensation rates concern both transport and termination,[4] it inexplicably addresses only the termination (*i.e.*, switching) portion of reciprocal compensation rates.

6. AT&T's analysis is best summarized by the table included at page 5 of its Letter, as replicated below:

AT&T Estimates

	Low estimate	High estimate
Total investment per line	$34.00	$80.00
Percent traffic sensitive	20%	20%
Traffic-sensitive investment per line	$6.80	$16.00
Switching annual charge factor	25%	25%
Monthly TS revenue requirement per line	$0.142	$0.333
Monthly switching minutes per line	1400	1400
Switching cost per minute	$0.00010	$0.00024

7. The organization of this declaration is as follows. First, we demonstrate that there are several methodological, mathematical and sourcing errors in AT&T's analysis that cause it to substantially understate costs associated with transport and termination of telecommunications traffic. We then correct AT&T's errors and present cost estimates more reasonably aligned with realities faced by carriers that actually deploy softswitch networks today.

---

[3] *Id.* at 4.

[4] *Id.* at 1.

8. Our revised estimates will show that even if we were to assume that all telecommunications networks were reliant solely upon softswitch technologies (an unreasonable assumption as we explain in the final section of this Declaration), per minute transport and termination costs range between $0.00758 and $0.01330 -- well above AT&T's estimates and the current rate of $0.0007 established by the FCC for internet service provider ("ISP")-bound traffic.

9. It is important to differentiate the per minute termination costs calculated in this Declaration from the costs presented in NuVox's *Ex Parte* Letter of October 2, 2008. The current Declaration *corrects* AT&T's analysis of the costs of a softswitch. However, it in no way represents the full "additional costs" incurred by carriers in transporting and terminating calls. For example, neither the AT&T analysis nor our corrected analysis includes costs for signaling, transport and aggregation facilities in collocation spaces (the importance of these components will be discussed presently). For these and other reasons, neither the AT&T nor our corrected costs presented in the current Declaration should serve as a basis for setting intercarrier compensation rates.

10. By contrast, the NuVox *Ex Parte* Letter of October 2, 2008, presented the results of a cost study QSI conducted for NuVox that reflects *all* the "additional costs" of *all* components involved in the transport and termination of calls.

II. AT&T'S ANALYSIS IS INVALIDATED BY ERRORS, OMISSIONS AND UNSUPPORTED ASSUMPTIONS

11. AT&T's analysis suffers from a number of inaccuracies, omissions and unsupported assumptions; these fatal flaws are discussed in detail below.

A. AT&T Errs in Its Calculation of Per Line Softswitch Investment

12. AT&T calculates a "High Estimate" for total investment per line at $80. AT&T derives this number in the following three steps:[5] (1) AT&T estimates the cost for a Class 5 circuit-switch in the 1999-2000 timeframe at $128 per line; (2) AT&T estimates the per line cost for a Class 5 switch in 2008 by assuming that switch prices fell at an annual rate of 3% and applying this assumption to the estimate of $128 (the result is $100); (3) AT&T assumes that the cost saving for softswitches over circuit switches are 20%, and applies this percent reduction to produce its final "High Estimate" for Total Investment per Line (which is $80). As we explain below, all three steps contain serious flaws.

13. AT&T claims that its calculations in Step 1 are based on the fixed and per-line switch cost adopted by the Commission in its *Tenth Report and Order*.[6] Yet the number AT&T cites as being adopted by the Commission for Class 5 host switches ($468,700) is incorrect. The correct number is $486,700 – it appears that AT&T's analysts simply transposed the second and third figures when

---

[5] *Id.* at 2-3 resulting in the $80 per line estimate employed in table on p. 5 of the letter.

[6] *Id.* at 2, n.7 citing *Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non- Rural LECs*, CC Docket Nos. 96-45, 97-10, Tenth Report and Order, 14 FCC Rcd 20156 (1999) ("*Tenth Report and Order*").

inputting the values into its analysis.[7] With this correction AT&T's estimate in Step 1 should be $129 instead of $128 per line.

14. AT&T's assumption in Step 2 – that switch prices fell by 3% annually over the relevant period – is simply wrong. Switch prices in 2008 are essentially at the same level as they were in the 1999-2000 timeframe. Specifically, according to the most recent AUS Telephone Plant Index ("TPI"),[8] the price index for Digital Electronic Switching is currently 24,[9] and ranged between 22 and 25 in 1999-2000.[10] In other words, the *cumulative* 8-year decrease in switch prices, as reported by AUS, is no more than 4% in total,[11] which is radically different from AT&T's *assumption* of a 3% *annual* decrease for each year over that period (which translates to a cumulative reduction equal to 22%).[12] With this correction, the resulting per line cost for a Class 5 switch in 2008 is $124[13] (replacing AT&T's erroneous estimate of $100).

15. AT&T's numerical assumption in Step 3 (20% cost savings for softswitches over circuit switches) is based on manufacturers' advertising claims. Clearly, these claims – claims that are carefully formulated as "can save" and "up to" –

---

[7] *Tenth Report and Order* ¶ 296 ("We adopt the fixed cost (in 1999 dollars) of a remote switch as $161,800 and the fixed cost (in 1999 dollars) of both host and stand-alone switches as $486,700. We adopt the additional cost per line (in 1999 dollars) for remote, host, and stand-alone switches as $87.").

[8] *AUS Telephone Plant Index*, Bulletin No. 38 (Cost Trend Tables from 1946 to July 1, 2008). This is a semi-annual index, with data points reported for January and July of each year and expressed in 1973 dollars.

[9] *Id.* (July 2008 data).

[10] *Id.* (the value of 22 corresponds to the price index for January 2001).

[11] Measured from the high value of 25 observed in 1999-2000 to the current value of 24.

[12] Calculated as (1 - $100/$128), or, equivalently $(1 - 0.03)^8 - 1$.

[13] Calculated as $129 *24/25.

cannot be considered objective, and, in fact, they contradict NuVox's actual experience. Indeed, not only are the initial investment savings experienced by NuVox smaller than the manufacturers' claims, but the ongoing operations are more expensive for a softswitch compared to a circuit switch. Further, as discussed below, AT&T's cost saving assumption does not account for the fact that the softswitch alone is but one piece of the packet-enabled platform that supports voice-switching in a modern network. Additional ancillary equipment must be included before a softswitch can operate effectively as a voice switch. Nevertheless, even if we use AT&T's 20% cost-savings assumption derived from these claims, the "High Estimate" for Total Investment per Line resulting from corrections in Steps 1 and 2 is $99,[14] instead of AT&T's $80.

16. AT&T Letter derives its "Low Estimate" for Total Investment per Line ($34)[15] using softswitch sales and port volumes reported by Dittberner Associates. As is evident from examination of the source data,[16] the reported sales and port volumes are world-wide figures, and as such, are very poor estimates for the softswitch cost incurred by US carriers. Further, AT&T recognizes that "Dittberner figures may exclude some of the softswitch installation services necessary to engineer fully these switching systems."[17] Indeed, AT&T's "Low Estimate" conflicts substantially with actual NuVox

[14] Calculated as $124 * 80%.

[15] The derivation is done on at 3 of AT&T Letter.

[16] AT&T's Letter provides the hyperlink to the source in its footnote 13, which is http://www.dittberner.com/news/press_release.php?id=79.

[17] AT&T's Letter at 3.

data in two important ways: (1) AT&T has included only the cost of the soft-switch/router itself and has excluded necessary call control and other periphery equipment that must be included to accommodate voice traffic; (2) even without the additional equipment, the price paid by NuVox solely for the soft-switch itself on a per-port basis substantially exceeds AT&T's "Low Estimate." Specifically, NuVox's experience is that softswitch purchases – although not priced on a per line basis – exceed **[BEGIN HIGHLY CONFIDENTIAL END HIGHLY CONFIDENTIAL]** per DS0 equivalent without including ancillary equipment necessary to either originate or terminate traffic from other carriers as is required under section 251(b)(5). It is primarily for this reason (*i.e.*, the gross disparity between AT&T's poorly structured estimate and conflicting, real-world data) that we believe AT&T's "Low Estimate" must be removed from consideration in its entirety as a reasonable proxy for terminating costs.

B. AT&T's Per-Line Investment Calculations Omit Necessary Ancillary Softswitch Components

17. In addition to the above errors, AT&T errs by excluding numerous necessary network components related to softswitches without which the softswitches would be completely incapable of either originating or terminating calls from another carrier for any purpose, let alone terminating traffic pursuant to 251(b)(5). As discussed below, the costs of these components are traffic sensitive, in that they stand in direct relationship to traffic and, therefore, should be included in the cost of terminating traffic.

18. Specifically, AT&T's analysis ignores such necessary components as multiplexers, routers, application servers, policy servers, signaling gateways and session border controllers. Without each of these components, softswitches can neither originate nor terminate calls to an outside network.

19. The functionality of the components omitted by AT&T can be summarized as described below.[18]

Multiplexers, as utilized in the NuVox network (as well as most other CLECs' networks), provide for connectivity, circuit management and aggregation as circuits appear from collocation sites and are connected to aggregated central office facilities. The costs related to multiplexers generally vary with circuit counts and traffic volume in a packetized network.[19]

Routers transport voice traffic throughout the NuVox network, ultimately aggregating and delivering traffic to the softswitches that interact with the public switched telephone network ("PSTN"). NuVox deploys at least four levels of routers within its network[20] and it has been NuVox's experience that capital expenditures for routers are traffic-sensitive. Specifically, Internet Protocol ("IP") voice traffic, by its very nature, generates large volumes of packets as calls are held in service. The voice traffic pushes routers toward their Packets Per Second ("PPS") limitations, which forces NuVox to implement upgrades to router processors and/or line cards to accommodate traffic or to add additional routers all together. We include certain NuVox-specific router-related costs in our updated analysis below.

Servers provide sources of information used to determine line level capabilities and other necessary information required to originate and terminate voice calls. For example, application servers are essential to the call setup and tear down portions of communication sessions. The Central Processing Units ("CPUs") in application servers, for example, are sized based upon message volume. Moreover, application server costs generally vary proportionately to the number of busy hour calls they support. NuVox's

---

[18] Network probes – required to maintain voice quality in a packetized network – are discussed elsewhere in paragraph 23 of this Declaration and, therefore, are not listed here.

[19] These additional costs, although reasonably included in the cost of transport and termination of telecommunications, have not been added into our analysis.

[20] Most CLEC configurations employ multiple routers in a hierarchal fashion. NuVox, for example, generally utilizes four separate routers as depicted in Attachment No. 1 to this affidavit. The CA Router, LA Router, GSR Router and ONS Router are all utilized in NuVox's typical deployment.

experience demonstrates that server costs are sensitive to traffic volume and we include NuVox-specific cost information related to server costs in the revised analysis below.[21]

Session Border Controllers ("SBCs") serve as firewalls for packetized traffic between NuVox's network and other companies' networks, ensuring the security of communications and the network. SBCs are involved in every call and it has been NuVox's experience that these pieces of equipment are session limited. The need for Session Border Controllers increases directly with the number of SIP sessions and, as such, their costs are traffic-sensitive. We include NuVox-specific SBC costs in the analysis below.

Signaling Gateways generally support simultaneous connections, providing intelligence to the packet environment similar to that provided in the circuit switched environment by SS7 equipment. They also provide critical connectivity to the outside SS7 world, without which calls could not originate or terminate. We include NuVox-specific costs in the analysis below.

20. Each of these components is depicted in Attachment No. 2 to this affidavit. Given that the costs of each of these components are traffic sensitive and critical to the operation of a softswitched voice network, our analysis includes costs as described above.

C. AT&T Underestimates the Traffic Sensitive Portion of a Softswitch

21. The AT&T Letter assumes that 20% of switching cost is traffic sensitive. In support of this assumption, AT&T references an affidavit by Dr. Currie filed on behalf of AT&T in Michigan.[22] AT&T's 20% assumption, however, is

---

[21] Note that we have excluded any "feature" costs such as those related to call forwarding, call waiting, etc. Also note that any "per line" or "per subscriber" license costs are not included in this analysis. Our intent is to capture non-customer-specific, usage sensitive costs only.

[22] AT&T Letter at 3-4 and n.16. Footnote 16 references Dr. Currie affidavit in Michigan Public Service Commission ("PSC") Case U-14781 (the case that addressed TELRIC cost of Michigan Exchange Carrier Association ("MECA") ¶¶ 56-57 and provides the following hyperlink: http://efile.mpsc.cis.state.mi.us/efile/docs/14781/0190.pdf. This link contains December 3, 2007 Affidavit of Dr. Kent A. Currie in Support of AT&T Michigan's Objections to the October 19, 2007 MECA Compliance Filing ("Currie Affidavit"). In his affidavit, Dr. Currie critiques and proposes modifications to the compliance studies of the MECA members – studies that were based on a softswitch architecture.

incorrect for a number of reasons. First, an examination of the referenced Michigan affidavit shows that Dr. Currie's estimate for the traffic-sensitive portion of switching cost is actually *50%*, rather than 20%, as erroneously claimed in the AT&T Letter.[23]

22. The 20% number (cited in the AT&T Letter[24]) is a *portion of line-related investment in total switching investment* (alone with usage and non-line-related (fixed) investment). The observation that 20% of switching investment is line-related was Dr. Currie's intermediary comment and did not capture his final recommendation about the percent of traffic-sensitive switching cost – his final recommendation was 50%. Specifically, after analyzing traffic sensitive switch costs, Dr. Currie concludes:

> Accordingly, the adjustments which I made to the MECA cost studies and which are reflected in the compliant rates shown in Confidential Schedule 2 treat 50% of local switching costs as non-traffic sensitive and *50% as traffic sensitive*. The non-traffic sensitive costs are included with switch port costs, and the traffic sensitive costs are included with local switching costs.[25]

23. Further, is it worth noting that in state cases where AT&T's own local switching costs were at issue (as opposed to the above discussed Michigan PSC Case U-14781 that addressed costs of other incumbent carriers), AT&T advocated an even *higher* percent of traffic-sensitive switch cost. For

---

[23] Specifically, see Dr. Currie's conclusion in ¶ 59 of the Currie Affidavit. Similarly, Michigan PSC Staff summarized Dr. Currie's analysis as follows: "AT&T proposes, based on the analysis of Dr. Currie, that the Commission should "treat at least 50% of the local switching costs as non-traffic sensitive."" Michigan PSC Case U-14781, Staff's Response to the Objections Filed to the Compliance Filings of the 12 Individual MECA Companies at 19-20 (Jan. 2, 2008).

[24] AT&T Letter at 3.

[25] Currie Affidavit ¶ 59.

example, in the Michigan SBC UNE case (Michigan PSC Case U-13531),[26] Dr. Currie noted that a number of state commissions adopted a traffic-sensitive percent in the vicinity of 70%, and that this number was deemed reasonable by the FCC in its September 18, 2002 BellSouth interLATA services order.[27] In the same UNE case, Dr. Currie also defended his opinion that a large portion of switch cost is traffic sensitive by invoking the cost-causality standard: "End-users with different levels of switch usage cause differences in switch costs. Usage rates are necessary to reflect cost causation and to avoid cross subsidies."[28] He further explained that "[i]n spite of the fixed "per line" pricing from the switch vendors to SBC Michigan, long-run switch costs still depend on usage"[29] and "[i]f customer usage increases to the point that more customers vie for talk paths than there are paths available, blocking occurs, and equipment capacity is added to serve the additional demand. This is the precise definition of usage-sensitive equipment."[30]

24. AT&T's assumption that only 20% of switch cost is traffic sensitive also conflicts with the realities of how softswitches are deployed by smaller carriers, such as CLECs. For example, in reviewing NuVox's soft-switch

---

[26] Note that while local switching cost may be addressed in the context of reciprocal compensation or UNE rates, they are often based on the same cost models and underlying principles, as it happened in Michigan PSC Case U-13531.

[27] Michigan Case U-13531, *In the matter, on the Commission's own motion, to review the costs of telecommunications services provided by SBC Michigan,* Rebuttal Testimony of Dr. Kent A. Currie at 41 (Mar. 22, 2004) ("Currie Testimony") available at http://efile.mpsc.cis.state.mi.us/efile/docs/13531/0381.pdf). Note that the specific assumption about the percent of traffic-sensitive cost utilized in AT&T (SBC) cost studies in this case is confidential.

[28] *Id.* at 4.

[29] *Id.*

[30] *Id.* at 41.

network, we have determined that there is little if any non-traffic sensitive "line-side" investment on the soft-switch platform. That is, there are no end-user dedicated facilities (such as analog line-cards) that are typically designated as the non-traffic sensitive portion of switching costs.[31] Instead, the softswitch is comprised of finite capacity, all of which is dedicated to the task of switching voice traffic as that traffic is presented to the switch from any number of products and/or applications.

25. The usage-sensitive nature of periphery equipment needed to support the softswitch is even more profound. For example, much of the software and even portions of the hardware necessary for voice quality assurance on an IP-enabled network (*e.g.*, various probes and the session border controllers themselves) are licensed based upon usage characteristics including concurrent call paths, or sessions. Further, much of the intellectual property

---

[31] In ¶1057 of its *Local Competition Order (In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket Nos. 96-98 and 95-185. First Report and Order (rel. Aug. 8, 1996) ("*Local Competition Order*")), the FCC found that line ports, which are dedicated to end users, are non-traffic sensitive costs and should not be included in the "additional" cost of termination. The FCC also found that only "usage sensitive" costs should be included:

> We find that, once a call has been delivered to the incumbent LEC end office serving the called party, the "additional cost" to the LEC of terminating a call that originates on a competing carrier's network primarily consists of the traffic-sensitive component of local switching. The network elements involved with the termination of traffic include the end-office switch and local loop. The costs of local loops and *line ports* associated with local switches do not vary in proportion to the number of calls terminated over these facilities. We conclude that such non-traffic sensitive costs should not be considered "additional costs" when a LEC terminates a call that originated on the network of a competing carrier. For the purposes of setting rates under section 252(d)(2), only that portion of the forward-looking, economic cost of end-office switching that is recovered on a *usage-sensitive* basis constitutes an "additional cost" to be recovered through termination charges.

(Emphasis added; footnote omitted).

costs inherent in an IP-enabled network are governed by usage-driven statistics.

26. In fact, because softswitches are deployed (at least within the NuVox network) to "switch" packets of information from inbound trunks to outbound trunks (*i.e.*, no portion of the softswitch is dedicated to one particular end user or customer) the entire softswitch is properly treated as a shared facility. Further, because the softswitch is sized based solely upon the volume of traffic it can accommodate, from a costing perspective, the softswitch should be treated the same way as tandem switch has been treated in the circuit switched environment – *i.e.*, as 100% usage sensitive investment, shared amongst all minutes of use it accommodates. However, we understand that opinions may differ in regard to this question. Therefore, in our re-statement of AT&T's analysis we employ a conservative assumption that 80% of switching cost is traffic sensitive to generate the "Low Estimate" of our revised per minute transport and termination cost. For our "High Estimate" we assume that 100% of switching costs are traffic-sensitive.

D. AT&T Underestimates the Annual Charge Factor

27. One of the final steps in the AT&T analysis is the conversion of investment into "monthly traffic sensitive revenue requirements per line." To accomplish this task, AT&T applies an Annual Charge Factor of 25% to the per line investment.[32] AT&T claims that this value is conservative because the FCC

[32] AT&T Letter at 4.

input for "capital recovery and maintenance" adopted in the *Tenth Report and Order* was even lower at 19.1%.[33] AT&T's justification for its 25% assumption is conceptually flawed[34] because "capital recovery and maintenance" are only two of the many groups of costs that need to be recovered through cost factors. Omitted from AT&T's analysis are shared and common cost (discussed further below), as well as such important direct[35] switch-specific costs as land, buildings and power associated with the switch.[36]

28. Land, building and power costs associated with the switch typically constitute an approximate 10 percentage point addition to the maintenance and capital recovery factors taken alone. As such, adding those costs to the 25% capital recovery estimate of AT&T results in a corrected Annual Charge Factor in the vicinity of 35%. This number is far more consistent with annual charge

---

[33] *Id.* at 4, n.24.

[34] AT&T's Letter also fails to consider the differences between TDM and softswitches. For example, Embarq suggested before the Texas PUC that "Asset lives [for IP switches] will be different and likely shorter than with TDM." (Embarq's presentation to the Cost Modeling Workgroup *Local Exchange Carrier IP Switching and Transport Network Design,* at 7, Texas PUC Project No. 34293 ("Project for Staff Study of Cost Models in Connection with Substantive Rule §26.403 Texas High Cost Universal Service Plan (THCUSP)") (July 25, 2007) ("Embarq's Presentation"). Shorter asset lives for softswitches compared to circuit switches suggest that softswitches would have higher Annual Charge Factors (other things being equal).

[35] We call them "direct" to distinguish from the shared and common cost, which are also omitted by AT&T, as discussed below.

[36] As explained in the *Tenth Report and Order* at ¶ 417, land and building investment associated with the switch are explicit investment categories (separate from switch investment) within the switching module of the FCC Synthesis Model. Note that in other cost models, such as the AT&T (SBC) cost models, land and building costs associated with switching are recovered through cost factors (rather than through direct modeling of investment).

factors AT&T has advocated in the past when its own switch-based rates are being evaluated.[37]

E. AT&T Fails to Include Shared and Common Costs

29. AT&T's per-minute of use cost calculation fails to account for shared and common costs. Shared and common costs, however, are standard cost components under forward-looking cost methodologies and certainly under the FCC's Total Element Long Run Incremental Cost ("TELRIC") methodology.[38]

30. As the FCC found in ¶1058 of its *Local Competition Order*:

> A rate equal to incremental costs may not compensate carriers fully for transporting and terminating traffic when common costs are present. We therefore reject the argument by some commenters that "additional costs" may *not* include a reasonable allocation of forward-looking common costs. [...] To ensure that rates for reciprocal compensation make possible efficient competitive entry, we conclude that termination rates *should include an allocation of forward-looking common costs.* [39]

---

[37] This number is based on our experience with recent AT&T UNE cost cases and is in line with AT&T proposals in these cases. While AT&T cost studies are generally confidential, AT&T (Ameritech) 1997 cost studies from Ohio UNE case 96-922-TP-UNC were recently released from confidential status by the Ohio Commission. (See http://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=96-922-TP-UNC&x=6&y=11). These cost studies contain much higher ACFs for digital switching. Specifically, Annual Charge Factors in the March 18, 1997 filing ranged from 37% to 41% depending on the type of the switch. Another factor that makes our assumption for the Annual Charge Factor conservative is the fact that power expenses have increased significantly compared to their historical levels. For example, prices for energy goods more than doubled compared to the year 2000. Specifically, based on the most recent (2Q 2008) Gross Domestic Product Price Index for "gasoline, fuel oil, and other energy goods," energy prices constitute 231.5% of the level observed in 2000 (see Bureau of Economic Analysis, *National Income and Product Accounts* Table 1.5.4 "Price Indexes for Gross Domestic Product, Expanded Detail", available at http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=34&Freq=Qtr&FirstYear=2006&LastYear=2008).

[38] *Local Competition Order* ¶ 629;47 CFR §§ 51.505 and 51.705.

[39] *Id.* ¶ 1058 (emphasis added).

31. Shared and common cost markups often capture such cost categories as corporate operations expenses, customer service expenses, plant non-specific expenses and general support cost.[40] Likewise, shared and common costs are typically expressed as a markup on direct cost. While the shared and common markup percentages *approved* in RBOC UNE cases may approach 30%,[41] RBOCs' *proposed* shared and common mark ups are even higher.[42] Further, because of scale economies, it is reasonable to expect that RBOCs would have lower shared and common overhead than smaller companies (CLECs and small ILECs).[43] In other words, a shared and common mark up of 25% (the value used in our restatement of AT&T's analysis below to generate the "High Estimate" of transport and termination per minute cost) is a highly conservative value. Nevertheless, in order to demonstrate that, even without this correction, our re-stated cost estimates are significantly higher than

---

[40] See *Tenth Report and Order* ¶ 19 ("There are also a number of expenses and general support facilities (GSF) costs associated with the design of a forward-looking wireline telephone network. GSF costs include the investment related to vehicles, land, buildings, and general purpose computers. Expenses include: plant-specific expenses, such as maintenance of facilities and equipment expenses; plant non-specific expenses, such as engineering, network operations, and power expenses; customer services expenses, such as marketing, billing, and directory listing expenses; and corporate operations expenses, such as administration, human resources, legal, and accounting expenses." (footnotes omitted)).

[41] For example, in the most recent SBC Ohio UNE case the Ohio Commission ordered a 27.72% shared and common factor. *See* Case No. 02-1280-TP-UNC ,*In the Matter of the Review of SBC Ohio's TELRIC Costs of Unbundled Network Element,* Order at 103 (Nov.2, 2004).

[42] While RBOCs' proposed shared and common mark ups are typically confidential, Qwest's recent public filing in the Colorado Public Utilities Commission UNE case proposes common and shared markup of 39.6% for most elements, and as high as 76.8% for some elements. *See* Public Utilities Commission of Colorado, Docket No. 07A-211T, *In the Matter of Qwest Corporation's Application, Pursuant to Decision Nos. C06-1280 and C07-423, Requesting that the Commission Consider Testimony and Evidence to Set Costing and Pricing of Certain Network Elements Qwest is Required to Provide Pursuant to 47 U.S.C. §§ 251(8) and (C),* July 2, 2008 Qwest Filing available at http://www.dora.state.co.us/puc/DocketsDecisions/DocketFilings/07A-211T_Qwest07-02-08Testimony.zip.

[43] This is true because CLECs will have a relatively lower level of output and direct cost over which to spread their shared and common costs.

AT&T's estimates, we assumed 0% shared and common mark up in our calculation of the "Low Estimate."[44]

F. AT&T Fails to Account for Traffic Sensitive Costs of Transport and Aggregation

32. AT&T's analysis accounts only for a carrier's traffic sensitive costs of local softswitch-based switching; however, it fails to account for the traffic sensitive costs associated with transport. Sec 251(b)(5) of the Telecommunications Act of 1996 states:

> **SEC. 251. [47 U.S.C. 251] INTERCONNECTION.**
> (5) RECIPROCAL COMPENSATION.--The duty to establish reciprocal compensation arrangements for the *transport* and *termination* of telecommunications.

33. Further, given the FCC's prior definition of termination, it seems clear that AT&T's analysis fails even to account for all necessary termination costs on a CLEC network. For example, in its *Local Competition Order*, the FCC defined "termination" for purposes of section 251(b)(5) as follows:

> We define "termination," for purposes of section 251(b)(5), as the switching of traffic that is subject to section 251(b)(5) at the terminating carrier's end office switch **(or equivalent facility) and delivery of that traffic from that switch to the called party's premises.**[45]

Thus, the FCC explicitly found that "delivery of [...] traffic from [the] switch to the called party's premises" is part of termination. This observation is particularly relevant to CLECs because they typically deploy networks that

---

[44] This assumption does not change our opinion that shared and common costs must be recoverable in any terminating charge in order for those rates to be reasonably compensatory.

[45] *Local Competition Order* ¶ 1040 ((emphasis added).

rely heavily on transport facilities between their local switching platform and collocation facilities in an ILEC central office before ultimately connecting to the customer's local loop.

34. CLEC end-office switch locations generally do not include analog-based, customer-dedicated terminations (such as Main Distribution Frames and line-side DS0 level switch ports/cards) that are traditionally found in the ILEC central offices. Indeed, even where softswitches are deployed in NuVox's network, customer dedicated, or non-traffic sensitive, connections generally take place within collocation facilities which are connected to NuVox's central offices by traffic sensitive transport facilities.[46] As such, including the costs of the traffic sensitive transport in an analysis designed to determine the cost of traffic termination is not only consistent with the FCC's rules, but absolutely critical if one intends to accurately determine the *actual* cost of traffic termination.

35. To fully appreciate the extent to which CLECs may incur traffic sensitive costs not incurred by ILECs, it is worthwhile to compare the CLEC and ILEC network architectures in more detail.

36. CLECs often enter the market with a distributed network architecture that is significantly different from that of the ILECs. Under this distributed architecture, CLECs tend to substitute longer transport routes for switching

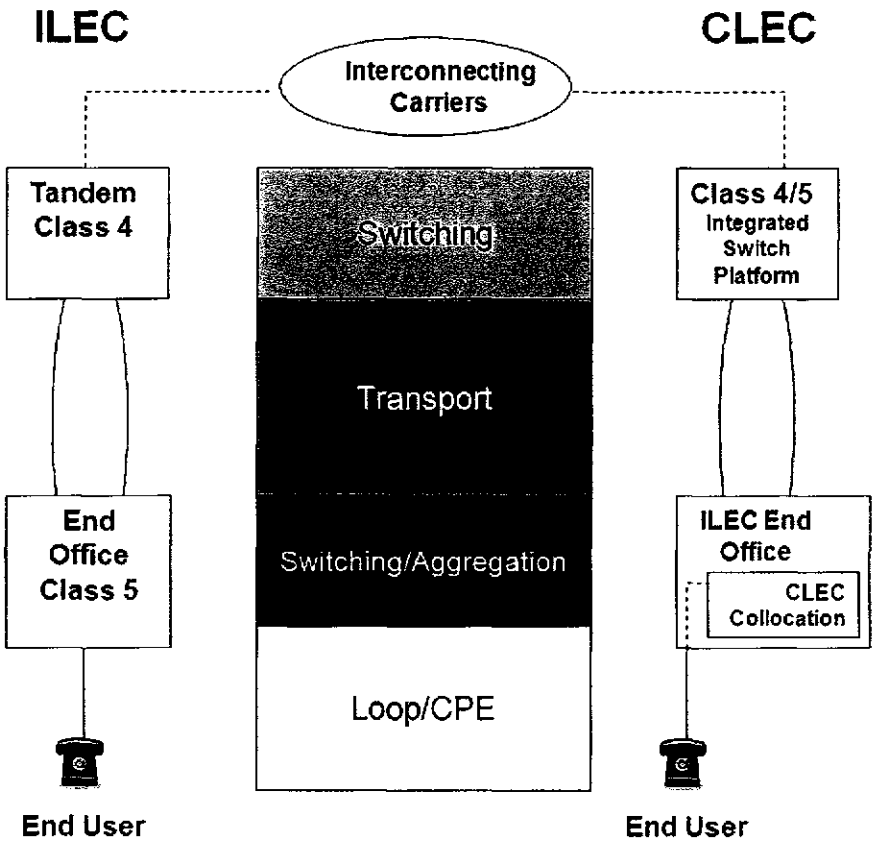
[46] Embarq indicated before the Public Utility Commission of Texas that the costs of networks including IP switches – as compared circuit switches – would need to "reflect incremental line gateway equipment to terminate/interface analog loops to IP," as well as additional costs associated with "increased transport requirements for IP." *See Embarq's Presentation* in *Texas PUC Project No. 34293* at 13.

nodes and outside plant facilities, while at the same time providing origination/termination services throughout large geographic areas roughly comparable in size to areas served, for example, by ILEC tandem switches (which aggregate traffic from the ILEC's many end office switches).

37. The two diagrams below illustrate and compare the two different architectures. The first diagram shows that while the traditional distributed ILEC architecture uses both Class 5 (end office) [47] and Class 4 (tandem) offices[48], CLECs generally deploy switches that provide a combined Class 5 (end office) and Class 4 (tandem) functionality (rather than switches that provide those functionalities on a stand-alone basis). Nonetheless, even though CLECs may not include a stand-alone tandem switch, they are still required to invest in transport facilities that stretch from their switching platform out to collocation arrangements wherein they house equipment capable of aggregating individual customer traffic onto the larger, shared network. These transport and aggregation facilities fall under either the "transport" or the "termination" definitions of the FCC's rules and, thus, it is indisputable that they must be recovered.

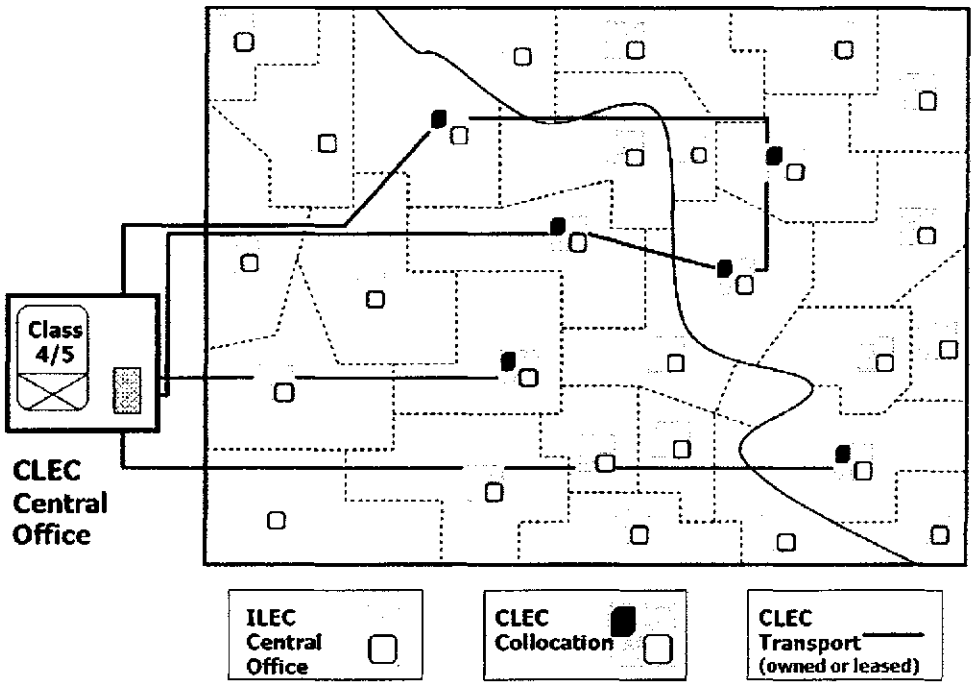
[47] Class 5 (end office) switches typically aggregate the traffic of end user customers over end user loops, which terminate at the switch. They also provide the vertical features, such as call waiting, etc.

[48] Class 4 (tandem) switches are typically used to aggregate the traffic from end office switches and provide a point in the ILEC network at which IXCs can connect for terminating and originating long distance calls.



38. The second diagram (below) represents a typical CLEC architecture that uses a single switch to serve a geographic area comparable to the serving area of an ILEC tandem (or, equivalently, a large number of ILEC central offices). Because the CLEC can expect to serve only a fraction of all the customers in a given area as compared to an ILEC who serves a substantial customer base in each area, the CLEC must extend its network across a larger geographic area in order to attract customers in numbers necessary to more fully utilize its switching resources.

Distributed CLEC Network Design



39. By extending their switching and transport networks into collocated arrangements in multiple ILEC central offices, CLECs often are able to serve a customer base that is spread out across an entire state or LATA using a single, integrated end office and tandem switching platform.

40. The cost advantages of this architecture are that it minimizes the amount of switching and central office investment required to serve a more *dispersed customer base*, both by minimizing the number of Class 5 local switches required, as well as reducing the need for a stand-alone tandem switch. However, the tradeoff is that this network architecture requires additional investments in *transport* and *collocation*.

41. Transport costs and collocation costs – which are completely ignored by AT&T – have significant traffic sensitive components. For example, larger volumes of terminating traffic to specific locations require higher capacity and more expensive transport facilities. Collocation facilities, in turn, are sized, in part, to accommodate terminating trunks and traffic. To the extent that larger volumes of terminating traffic to a specific collocation site require more or higher capacity level of trunk terminations, collocation costs increase. In other words, transport and collocation costs are, in significant part, traffic sensitive and as a result, some portion of those costs must be included in termination rates. AT&T's analysis completely ignores any type of transport costs, let alone the increased transport costs that CLECs are likely to face.

III. A "FORWARD LOOKING, LEAST COST NETWORK DESIGN" WOULD NOT CONSIST OF 100% SOFT-SWITCHES

42. As we describe above, AT&T's analysis is riddled with errors and omissions. However, its largest flaw is methodological: AT&T makes the implicit assumption that reasonable transport and termination rates can be calculated under an assumption that all traffic is accommodated by a softswitch. This assumption simply does not correspond to the reality of the marketplace and is not consistent with the "forward looking, least cost network design" requirements of either a TSLRIC or TELRIC analysis.[49]

[49] Total Service Long Run Incremental Cost ("TSLRIC"). *See* CFR §51.705, §51.711 and §51.505, as well as the discussion below addressing the appropriateness of the forward-looking cost standard to reciprocal compensation rates.

43. CLEC networks are often used as benchmarks for forward-looking technologies because they have been recently designed and deployed without the same historical issues that often face incumbent carriers with legacy technologies. However, even with this ability to choose technologies based solely upon their need to effectively and efficiently serve customers, the vast majority of CLECs, including NuVox, have constructed and continue to operate hybrid networks employing both IP-enabled and circuit-switching platforms. Further, for the foreseeable future, this same hybrid architecture is expected to prevail, in one form or another, and the majority of NuVox's, and other carriers', customers and usage will continue to be accommodated in large measure by circuit switches.

44. There are numerous reasons why a hybrid architecture remains the most efficient "forward looking" and "least cost" network design choice for most CLECs and ILECs. Indeed, even AT&T in recent proceedings has strongly opposed initiatives that would base its own costs on an assumed architecture employing solely softswitches. For example, less than one year ago in Texas Public Utilities Commission ("PUC") Docket No. 34723, wherein AT&T's costs were being evaluated in relation to the state's Universal Service Fund ("USF"), AT&T's witnesses filed testimony supporting a *forward-looking* network based on a 100% *circuit-switched* network, *i.e.*, 0% softswitches.[50]

---

[50] Texas PUC Docket No. 34723 *Petition for Review of Monthly Per Line Support Amounts from the Texas High Cost Universal Support Plan Pursuant to PURA § 56.031 and Subst. R. 26.403.* (*"Texas USF Docket"*) Testimony of AT&T witness Steve Turner (November 16, 2007) at 13.

45. In the related Texas project,[51] while exploring whether a 100% softswitch-based network was appropriate or optimal, AT&T noted that a combination of circuit switches and softswitches would most likely be optimal:

> It is quite possible that in certain situations, the appropriate answer from a network perspective for the use of softswitching is that it is implemented *in combination with* a circuit-based switching solution. In other words, instead of requiring remote terminals everywhere, as discussed above, utilizing both types of switches *might make the most sense from a network architecture perspective*. Moreover, it is also *likely* that customer-specific requirements within a wire center may be the driver for using more than one type of switch. *The bottom line is that the use of a single type of switch – either softswitch or circuit switched – may not be the appropriate answer given the requirements for the network placed by customers.*[52]

46. Further, in that same Texas proceeding, AT&T and other ILEC cost experts also noted that softswitches may not always be the most efficient solution for the following reasons:

> A critical concept to consider from a modeling perspective with softswitching is the types of interfaces that are available on the softswitch. According to our preliminary research, softswitches do not have what are commonly referred to as analog interface cards. Analog interface cards are found in a circuit-based switch and are used to signal and provide power to POTS lines that are served exclusively over copper. According to our preliminary investigation, with a softswitch, *all lines* must be on a digital loop carrier or its equivalent to take the analog lines and place them in a format that will interface with the softswitch.[53]

---

[51] Texas Project No. 34293. This project lead to the Texas USF Docket No. 34723.

[52] Texas PUC Project No. 34293, Letter by Mike Lieberman and Steve Turner on behalf of AT&T, at 2 (emphasis added) (July 10, 2007).

[53] *Id.* at 1 (emphasis added).

Embarq noted that "[t]o date, no connecting wireless or major IXC has requested an IP interconnection arrangement"[54] and that an IP switching network "[r]equires interface to the existing PSTN networks as significant volumes of traffic will continue to be TDM for many years."[55]

47. In other words, an assumption of 100% softswitches requires an equally unrealistic assumption that all lines originating at customer premises will be delivered to the softswitch in digital format – a requirement that would require enormous changes to the existing local network.

48. Next, it is also important to note that all large ILECs refuse to interconnect on an IP basis. AT&T, Qwest and Verizon have all prohibited competitive carriers from interconnecting with their networks for the passage of local or long distance traffic using Internet Protocol ("IP") based signaling. As such, AT&T's assumption that 100% of traffic termination could be accommodated by softswitch platforms falls flat when you consider that AT&T will not accept CLEC traffic (either for local or long distance purposes) using the native IP-enabled format of those same softswitches.

49. Last, it is ironic that AT&T is basing its cost estimates on a "hypothetical" network configuration of 100% softswitches while the company in the recent

---

[54] *Embarq's Presentation in Texas PUC Project No. 34293* at 7. *See also Currie Affidavit* ¶ 24 ("Because the interexchange network with which a softswitch needs to interconnect is generally circuit-based rather than packet-based, the softswitch uses Time Division Multiplex ("TDM") cards for the provision of non-Internet-protocol inter-switch trunking."). While Dr. Currie makes this statement to describe MECA's cost study, he appears to agree with this statement. Further, in ¶ 53 he also notes that "AT&T Michigan has not contested in this proceeding that the investment associated with TDM cards is traffic sensitive."

[55] *Embarq's Presentation in Texas PUC Project No. 34293* at 7.

past has so vigorously resisted the "hypothetical" network standard. For example, the same Dr. Currie, on whose analysis the AT&T Letter relies so heavily, testified in 2005 against the use of a "hypothetical" network standard, stressing instead that the network actually deployed by the provider should be considered:

> **Q14. HAS THE FCC INDICATED THAT TELRIC RELIES ON COST INFORMATION SPECIFIC TO THE INCUMBENT LEC SUCH AS SBC OHIO?**
> **A14.** Yes. The FCC "intended to consider the costs that a carrier would incur in the future." This can only reasonably mean that TELRIC is the method for measuring SBC Ohio's forward-looking costs rather than the costs of some unknown, hypothetical firm. Furthermore, the Solicitor General speaking on behalf of the FCC stated in his July 2001 brief to the Supreme Court in Cases No. 00-511, 00-555, 00-587, 00-590 and 00-602 that TELRIC "rests on the rational economic assumption that as new, more efficient equipment becomes available, the value of older, less efficient equipment will be affected." Further, the Solicitor General stated:
>
> > The costs measured by TELRIC are nonetheless *those of the incumbent itself* [emphasis added]. Those costs are based, moreover, on actual prices of equipment that is commercially available today—equipment that carriers are already using to upgrade and expand their networks.
>
> These comments clearly indicate that TELRIC is based on current information and knowledge. In addition, this TELRIC methodology is applicable to SBC Ohio. Consequently, TELRIC methodology must rely on actual information and knowledge of SBC Ohio and not information and knowledge of hypothetical firms or firms that are not incumbent local telephone companies.[56]

50. The same notions are expressed by another AT&T witness, Dr. Deborah Aaron:

---

[56] Ohio Public Utilities Commission, Case No. 02-1280-TP-UNC, Direct Testimony of Dr. Kent Currie on behalf of SBC Ohio (now AT&T) at 5-6 (emphasis in original, footnote omitted).

> It is both appropriate and necessary to hold a purported TELRIC analysis up to the light of reality to assess whether the modeling has deviated from any reasonable representation of costs that *could be achieved by a real firm going forward.*[57]

51. Clearly, it is unlikely that "the incumbent itself" – *i.e.*, AT&T – will be 100% softswitch based in the foreseeable future. The startling *inconsistency* in AT&T's advocacy should cause the Commission to seriously discount the information AT&T has provided in this proceeding. In sum, AT&T's analysis is fatally undermined by the unrealistic and irrational assumption that all traffic terminates exclusively over softswitches.

52. For the reasons discussed above, we include the cost of Softswitch to TDM handoff in our "High Estimate." In order to demonstrate that even without this correction our re-stated cost estimates are significantly higher than AT&T's estimates, we exclude these costs from our calculation of the "Low Estimate," which is generated here for illustrative purposes and does not change our opinion that costs associated with such a hand-off or the existence of hybrid networks should be ignored in the foreseeable future.

IV. COST METHODOLOGY ISSUES

53. While the FCC offered the states three options for establishing rates for transport and termination in its *Local Competition Order*, the FCC determined

[57] Michigan Public Service Commission, Case No. U-13531, Direct Testimony of Dr. Deborah Aaron on behalf of SBC Michigan (now AT&T), May 2, 2003 at 16 (emphasis added).

that its TELRIC methodology is the proper *cost standard* for determining the "additional costs"[58] for terminating calls:

> 1. States have three options for establishing transport and termination rate levels. A state commission may conduct a thorough review of economic studies prepared using the TELRIC-based methodology outlined above in the section on the pricing of interconnection and unbundled elements.[59]
>
> [...]
>
> Moreover, forward-looking economic cost studies typically involve "a reasonable approximation of the additional cost," rather than determining such costs "with particularity," such as by measuring labor costs with detailed time and motion studies.[60]

54. The AT&T letter does not explicitly discuss issues of costing methodology, so it is not clear to what extent AT&T's analysis is intended to adhere to the FCC's TELRIC methodology. However, while, as we have already discussed, AT&T's assumption of a 100%-softswitch-based-network is misguided and unwarranted, AT&T's assumption is clearly based on long run, forward-looking considerations.

55. Further, AT&T's analysis relies on 1400 "Monthly switching minutes per line" in order to generate specific costs per minute.[61] AT&T's Letter does not indicate whether these 1400 minutes represent "total demand" for the switching element – as required under TELRIC – or a smaller incremental volume of demand. However, based on our experience with ILEC cost

---

[58] 47 U.S.C. § 252(d)(2)(A)(ii).

[59] *Local Competition Order*, ¶ 1055; *see also* 47 CFR §§ 51.705 and 51.711.

[60] *Local Competition Order*, ¶ 1056.

[61] AT&T Letter at 5.

studies, we believe that 1400 minutes reasonably approximates total demand, consistent with TELRIC.

56. But, while AT&T's cost analysis appears to have some TELRIC characteristics, there are other aspects of the analysis that deviate from TELRIC. For example, the AT&T analysis has a component labeled by AT&T as "Monthly TS revenue requirement per line."[62] The term "revenue requirement" is a peculiar cameo appearance, however, of a concept associated with rate-of-return analysis, which is explicitly prohibited for transporting or terminating calls, as is evident from the following citation:

> We find that section 252(d)(2)(B)(ii) [...] indicates that section 252(d)(2) shall not be construed to "authorize the Commission or any State to engage in any rate regulation proceeding to establish with particularity the additional costs of transporting or terminating calls," [...] we believe that Congress intended the term "rate regulation proceeding" in section 252(d)(2)(B)(ii) to mean the same thing as "a rate-of-return or other rate-based proceeding" in section 252(d)(1)(A)(i). In the section on the pricing of interconnection and unbundled elements above, we conclude that the statutory prohibition of the use of such proceedings is intended to foreclose the use of traditional rate case proceedings using rate-of-return regulation.[63]

57. Whatever methodology AT&T may have employed, we believe that TELRIC is the appropriate methodology for costing and pricing call termination costs for the following reasons.

58. First, as the FCC notes in its *Local Competition Order*, "economists generally agree that prices based on forward-looking long-run incremental costs (LRIC) give appropriate signals to producers and consumers and ensure efficient entry

---

[62] *Id.*

[63] *Local Competition Order*, ¶ 1056.

and utilization of the telecommunications infrastructure."[64] The FCC then goes on to explain the general equivalence between Total Service LRIC and Total Element LRIC, and adopts the latter terminology.[65]

59. Further, to be consistent with the language of Section 252(d)(2)(A)(ii), it is important that the *increment* of output – in the LRIC study – appropriately captures the "additional costs" of terminating "calls." To capture the "additional costs" of terminating "calls," the increment of output in the study has to be the *total volume of traffic* that is terminated. Thus, the cost concept has to be some variant of a *total service* incremental cost methodology, which TELRIC is. Specifically, any cost methodology that fails to capture total service demand, and TSLRIC and TELRIC do, would be at odds with the plain language of Section 252(d)(2)(A)(ii): it would simply fail to capture all of the "additional costs" and capture only *some* of the "additional costs."

60. For example, a marginal cost construct would not be appropriate. Marginal cost calculates the additional cost associated with *one and only one* additional unit of output. Clearly, this cost construct is inconsistent – as a matter of economics – with the plain language of Section 252(d)(2)(A)(ii), which speaks not of the additional cost of terminating a single call but of the "additional costs of terminating such calls," *i.e.*, the cost*s* of terminating the *total volume* of call*s*.

---

[64] *Local Competition Order*, ¶ 630.

[65] *Id.*, ¶ 672.

61. Next, as in all instances in which carriers are required to offer wholesale services to other carriers, it is important that rates are appropriately compensatory.[66] Rates set at forward-looking total service long run incremental costs, such as TELRIC, are appropriately compensatory.[67] By contrast, rates based on a simple marginal cost analysis may be compensatory for the one, single additional unit under consideration but will fall far short of proper compensation for the total volume of calls.

62. Last, it is important to recognize that, where it concerns long distance traffic terminated by CLECs for IXCs, intercarrier compensation rates will provide for one-way compensation flows. That is, when CLECs terminate traffic for IXCs compensation is *one-way* and not *mutual and reciprocal* as envisioned by Section 252(d)(2)(A)(i). Specifically, Section 252(d)(2)(A)(i) provides as follows:

> (i) such terms and conditions provide for the *mutual* and *reciprocal* recovery by each carrier of costs associated with the transport and termination on each carrier's network facilities of calls that originate on the network facilities of the other carrier;

(Emphasis added.)

---

[66] AT&T and Verizon have in other fora suggested that intercarrier compensation rates should mimic competitive market prices and do not need to ensure adequate compensation to all carriers. This reasoning is flawed. In competitive markets, companies are able to scale back their operations and avoid losses for products when prices fail to be compensatory. By contrast, with respect to intercarrier traffic, no carrier is in a position to refuse traffic and, thus, they cannot scale back their operations to avoid losses when intercarrier compensation rates fail to be compensatory.

[67] TELRIC based rates will be compensatory for a specific company provided that the TELRIC study adequately reflects the specific circumstances of the company in question. For example, in ¶ 685 of its *Local Competition Order*, the FCC discusses the need to not deviate from the providing carrier's specific network topology and found: "This benchmark of forward-looking cost [*i.e.*, TELRIC] and existing network design most closely represents the incremental costs that incumbents *actually* expect to incur in making network elements available to new entrants." (Emphasis added.) This also means, of course, that a TELRIC-based rate for one company is not automatically compensatory for another dissimilar situated company.

63. Because CLECs will presumably not get to terminate traffic to the IXCs' networks on mutual and reciprocal terms, it is critically important that any intercarrier compensation rates be adequately compensatory, otherwise CLECs will be forced to subsidize IXCs with below-cost call termination. Again, rates set on forward-looking total service long run incremental costs, such as TELRIC, are adequately compensatory while rates set on more short-run, marginal analysis are not.

64. In our restatement of AT&T's cost analysis, we use a forward-looking total service long run incremental cost methodology, which, because it concerns network elements, is also TELRIC.[68]

V. RESTATEMENT OF AT&T'S MATHEMATICAL ANALYSES

65. In the table below we correct the many errors and omissions included in AT&T's original analysis. First, we correct AT&T's "Total investment per line" consistent with our discussion above (focusing only on the "high estimate" as it corresponds most closely with NuVox's invoiced costs for softswitch equipment – AT&T's low estimate was flawed in conception and substantially out of line with softswitch invoices we have seen on behalf of NuVox and other carriers). While our investment per line is a point estimate (rather than a range as employed by AT&T), we use a range approach for

[68] It is important to note that no specific changes to the AT&T calculations were necessary to incorporate this methodological approach as we believe the AT&T calculation (by using the 1,400 minutes of use per month) already relies upon this same method.

other numerical assumptions, and consequently, our final per minute cost is also represented by a range of "Low" and "High Estimate."

66. Second, we add costs associated with ancillary equipment, without which, as explained above, a softswitch cannot terminate voice traffic. Based on NuVox's experience, we assume that ancillary equipment constitutes a 35% markup over softswitch per line investment.

67. Third, we replace AT&T's assumption that 20% of switching cost is traffic sensitive with low and high estimates of 80% and 100%, respectively.

68. Fourth, we use a 35% Annual Charge Factor (instead of AT&T's 25%) to properly account for capital recovery, maintenance, land and building costs associated with the switch.[69]

69. Fifth, we add per minute transport cost (taken directly from QSI's analysis of NuVox's average transport costs per switched minute of use) to correct the fact that AT&T's analysis completely ignores the transport portion of "transport and termination cost" - the cost at issue in this docket.[70]

70. Sixth, for our "High Estimate" we add the cost of the handoff between the Softswitch and TDM network to reflect the reality of modern networks in which the majority of traffic that is terminated today (and will be terminated for the foreseeable future) relies upon a hybrid circuit-switched/soft-switched

---

[69] See section II for the support of this number.

[70] See section II for further discussion of this methodological error in AT&T's analysis. It is important to note that this figure does not include any costs associated with aggregation equipment in NuVox collocations (even though we believe some large proportion of those are reasonably included in the costs of call termination). The figure included in the study is strictly related to transport costs between the NuVox switch and its collocation arrangements.

platform.[71] For purposes of our "Low Estimate," we exclude this cost entirely although to do so is, in our opinion, unreasonable as such costs are likely unavoidable for at least the foreseeable future.

71. Seventh, for our "High Estimate" we add the Shared and Common markup of 25%[72] to properly account for these costs whereas, for our "Low Estimate," simply assumed a zero Shared and Common Markup.

72. These seven corrections and the resulting cost estimate for transport and termination per minute are captured in the table below.

#	Measure	AT&T Letter		NuVox Correction	
		Low Estimate	High Estimate	Low Estimate	High Estimate
1	Softswitch Investment per Line (approx.)	$34.00	$80.00	REDACTED	REDACTED
2	Ancillary IP-Enabled Voice Equipment			35%	35%
3	Total Investment Per Line			REDACTED	REDACTED
4	Percent "Traffic Sensitive"	20%	20%	80%	100%
5	Traffic sensitive investment per line	$6.80	$16.00	REDACTED	REDACTED
6	Switching Annual Charge Factor	25%	25%	35%	35%
7	Monthly TS revenue requirement per line	$0.14	$0.33	REDACTED	REDACTED
8	Monthly switching minutes	1,400	1,400	1,400	1,400
9	Switching Cost per Minute	$0.00010	$0.00024	REDACTED	REDACTED
10	Transport Costs			REDACTED	REDACTED
11	Softswitch to TDM hand-off			REDACTED	REDACTED
12	Shared and Common Costs (0% to 25%)			REDACTED	REDACTED
13	***Total Cost per Minute***	**$0.00010**	**$0.00024**	**$0.00758**	**$0.01330**

73. The resulting, corrected estimate for costs associated with the transport and termination of traffic cost is between $0.00758 and $0.01330 per minute.

---

[71] *See* section III.

[72] *See* section II for the support of this number.

VI. CONCLUSIONS

74. Methodological, mathematical and sourcing errors in AT&T's analysis cause it to substantially understate costs associated with the transport and termination of telecommunications traffic. As described herein, the per minute costs of transport and termination is more reasonably estimated within a range of $0.00758 to $0.01330 – well above AT&T's estimates and the current rate of $0.0007 established by the FCC for internet service provider ("ISP")-bound traffic.

Attachment 1

REDACTED

Attachment 2

REDACTED